IT INFRASTRUCTURE STUDY AND ASSESSMENT (INSA)

PHASE I – FINAL REPORT AND RECOMMENDATIONS

MARCH 30, 2011

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IT INFRASTRUCTURE STUDY AND ASSESSMENT (INSA)

A. EXECUTIVE SUMMARY

Introduction

In the Governor's memorandum dated July 21, 2010, the State Chief Information Officer (SCIO) was directed to engage an outside party to conduct a thorough assessment of exiting IT infrastructure, services and costs with the Office of Information Technology Services (ITS) and all Executive Branch agencies. In line with the Administration's efforts to focus government on delivering core services, the assessment was to include an in-depth look at areas across all Executive Branch agencies where consolidation and utilization of private sector IT services would bring more value to the citizens of North Carolina. In November 2010 ITS, under the direction of the SCIO, engaged Technology Partners International, Inc. (TPI) to conduct the assessment.

The scope of Phase 1 of the IT Infrastructure Study and Assessment (INSA) program was to:

- Establish a current Baseline for Participating Agencies (see Table 3 for the list of Participating Agencies) for IT Infrastructure Services

- Conduct an Operational Assessment for the Participating Agencies

- Assess and compare Participating Agencies current cost and services levels to the External Market Place

- Conduct a fact based sourcing assessment and analysis for the Baselined services

- Develop the business case(s) and associated recommendations for in-sourcing or outsourcing IT Infrastructure Services

The assessment employed a Baseline data framework that was uniformly applied across all Participating Agencies, which enabled a consistent and standard comparison to be performed. Participating Agency FY11 actual and forecast financial data was used in constructing the Baselines. Over 140 individuals were interviewed as part of 60 separate business, technical, or a joint business and technical staff interviews that were conducted across each of the Participating Agencies. Assessments were performed for 13 of the largest data centers associated with 10 of the Participating Agencies. Existing service levels were reviewed to assess the extent to which they are consistent with Best Practices and those commonly provided as part of private sector IT services. An IT Service Management (ITSM) self assessment was performed by each of the Participating Agencies based on an extract of process elements from the International Standards Organization (ISO)/ International Electrotechnical Commission (IEC) 20000 standards for IT service management. Lastly, Participating Agency costs for IT infrastructure services were compared to comparable outsourcing market pricing data.

The information obtained from the Participating Agency Baseline data, results of the Operational and Data Center assessment, IT Service Management self assessment results and current cost and service level comparisons were used in developing 26 alternatives for analysis. A decision matrix was utilized for scoring each alternative against three criteria – Cost Management, Risk Management and Service Management. Additionally, five-year financial models were developed for each alternative as input to the sourcing assessment and analysis for the Baseline services.

Assessment Findings

State organizations and employees involved in delivering IT infrastructure services have operated in a less than optimal environment with regard to securing adequate funding necessary to support agency mission requirements. This challenging environment has only been exacerbated by the Great Recession's impact on state government budgets, which has led to further declines in funding for IT

infrastructure services – resulting in lowering of service provisioning levels and increasing the risk profiles for states.

The situation in North Carolina is no different – and the State has been fortunate to not have experienced significant IT infrastructure service outages in light of the findings of the assessment. The absence of significant IT infrastructure services outages is due in great measure to the hard work and dedication of the State's organizations and staff responsible for delivering those services.

Baseline Highlights

Baseline financial data collected for FY10 and FY11 showed relatively flat growth in overall IT costs, with a slight increase (2%) in IT infrastructure costs from FY10 to FY11, as shown in Table 1 following.

Total In-scope IT Spend – by year (in thousands)			
Agency		**FY10**	**FY11**
INSA Totals • IT Infrastructure services are represented in the In-Scope amounts • Direct amounts refer to IT organization costs • Shadow amounts represent non-IT organization costs associated with delivering IT services • Non IT Infrastructure related costs are represented in the Out of Scope amounts (e.g., Applications related costs)	**In-Scope**		
	Direct	$173,337.6	$179,587.8
	Shadow	$45,020.6	$43,8766.0
	Subtotal	**$218,358.1**	**$223,353.9**
	Out of Scope		
	Direct	$113,066.9	$109,917.6
	Shadow	$13,955.6	$14,569.2
	Subtotal	$127,022.5	$124,486.8
	Combined		
	Direct	$286,404.5	$289,505.5
	Shadow	$58,976.2	$58,335.2
Grand Total		**$345,380.7**	**$347,840.7**

Table 1 Total In-Scope Spend

Growth in INSA IT infrastructure costs correlates with growth in the Baseline Full Time Equivalent (FTE) counts (2%) as shown in Table 2 following.

FTEs-detail, by year							
Agency		**FY10**			**FY11**		
	In-scope/Out of scope	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Enterprise Roll-up	Direct-Employees	750.3	1,045.9	1,796.2	774.1	1,062.2	1,836.3
	Direct-Contractors/Temps	68.5	113.8	182.3	63.6	104.5	168.1
	Subtotal	818.8	1,159.7	1,978.5	837.7	1,166.7	2,004.3
	Shadow-Employees	144.2	152.3	296.5	140.0	150.7	290.7
	Shadow-Contractors/Temps	0.2	5.6	5.7	0.2	8.8	9.0
	Subtotal	144.3	157.9	302.2	140.2	159.6	299.7
Grand Total		963.1	1,317.6	2,280.8	977.8	1,326.2	2,304.1

Table 2 FTE Detail

Baseline IT infrastructure service tower costs and associated FTE counts for FY11 are shown in Figure 1 and Figure 2 following.
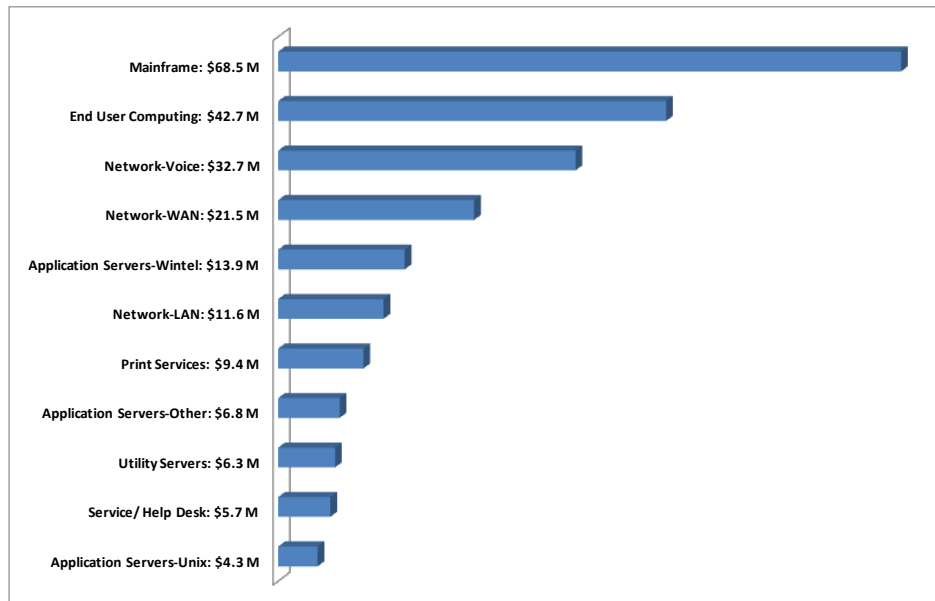
Figure 1 IT Infrastructure Spend by Service Tower
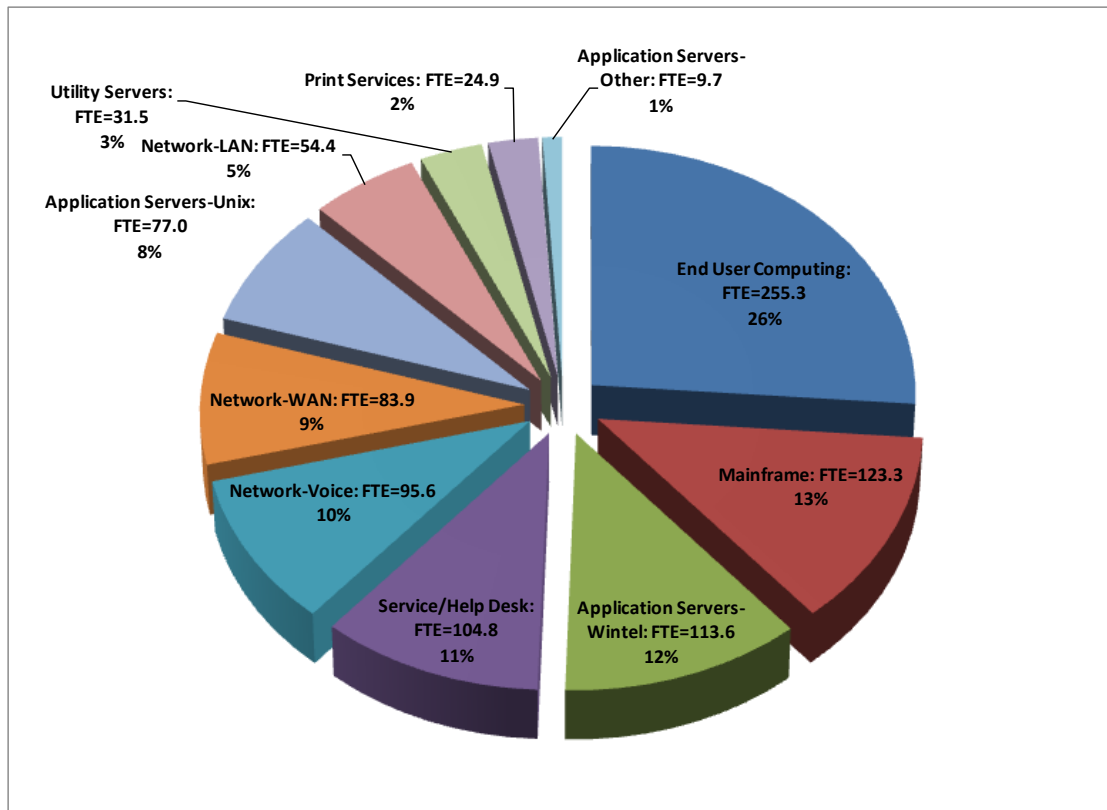
Figure 2 FTE Counts and Costs by Service Tower

Operational Assessment

Today, Participating Agencies operate within a mixed federated/centralized/decentralized model with regard to IT infrastructure services. Some agencies have their IT infrastructure services provided by ITS (consolidated), while others operate mostly independent of ITS (non-consolidated) with selected services provided fully, or partially, by ITS. This mixed model has inherent IT infrastructure service inefficiencies and contributes to a higher risk profile for the Executive Branch as limited IT infrastructure investment dollars must be allocated across a wider base of operations. A listing of INSA consolidated and non-consolidated agencies is depicted in Table 3 following.

Participating Agencies			
Non-Consolidated Agencies		**Consolidated Agencies**	
Information Technology Services - ITS (includes SCIO Office)			
Crime Control and Public Safety	CCPS	Alcoholic Beverage Control Commission	ABC
Department of Environmental and Natural Resources[1]	DENR	Commissioner of Banks	COB
Department of Health and Human Services	DHHS	Department of Administration	DOA
Department of Correction	DOC	Department of Commerce	COM

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[1] DENR IT infrastructure services are in the process of being consolidated into ITS.

Department of Revenue	DOR	Department of Cultural Resources	DCR
Department of Transportation	DOT	Department o f Juvenile Justice and Delinquency Prevention	DJJDP
Employment Security Commission	ESC	NC Industrial Commission	NCIC
NC Wildlife Resource Commission	WRC	Office of State Budget and Management	OSBM
		Office of State Personnel	OSP
		Office of the Governor	GOV
		Office of the Lt. Governor	LTGOV

Table 3 Participating Agencies

The Operational Assessment resulted in an aggregate score of 2.94, which is below what is considered as a minimum level of operational maturity for the scope of IT infrastructure services across Participating Agencies, as is depicted in Figure 3 following.
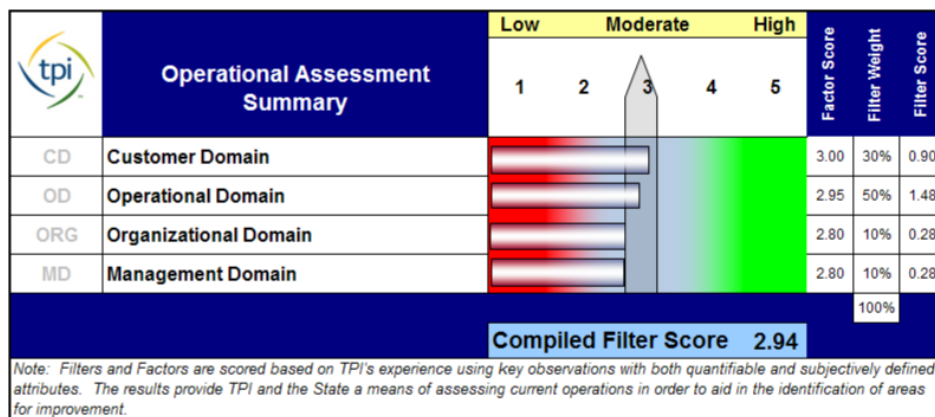
Figure 3 Operational Assessment Summary Score

The primary drivers behind the compiled filter score are in the areas of:

- Service Level implementation
- Formal Customer Satisfaction survey implementation
- Business understanding of the cost of IT services
- Ability to adequately maintain appropriate staffing levels and requisite skill sets
- The agencies (consolidate and non-consolidated) perceive that ITS is not providing value (service/cost) and is not sufficiently aligned with business needs.

Service Level Assessment

Service Level assessments were performed only for non-consolidated agencies and ITS. While service is generally perceived as being good when assessed by the IT and business organizations, the number, type and target performance levels are below market levels as indicated in Figure 4 following; therefore the actual level of service rendered is low.

Summary of Service Levels to Market

Overall Framework	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
			X			

Agency	Assessment
CCPS	No Service Levels in Place
DENR	No Service Levels in Place
DHHS	At Market
DOC	Below Market
DOR	At Market
DOT	Below Market
ESC	Not Comparable
ITS	Below Market
WRC	No Service Levels in Place

Service Level assessments were performed only for non-consolidated agencies and ITS – consolidated agencies by default inherit ITS Service Levels.

Figure 4 Service Level Assessment Results

Not surprisingly, Baseline costs for IT infrastructure services showed wide variations across the Participating Agencies – due in part to agency size, service consumption, technology platform distributions, available funding and other factors. With regard to comparison of aggregated Participating Agencies IT infrastructure service costs to outsourcing market pricing, it needs to be noted that current operational maturity and service levels are below those provided in the outsourcing market. Analysis of aggregate Participating Agencies costs as compared to outsourcing market pricing is depicted in Table 4 following and indicates only Mainframe services and Wide Area Network (WAN) services offer a high potential savings opportunity.

Tower	State of North Carolina - Composite Total Cost	< 5 %	5 < 10 %	10 < 15 %	15 < 20 %	> 20 %	Low $ Range	High $ Range
Mainframe	$ 41.0 M					X	$ 8.2 M	$ 8.2 M
Windows	$ 12.3 M	X					$ 0.0 M	$ 0.0 M
Unix	$ 3.0 M	X					$ 0.0 M	$ 0.0 M
Utility Servers	$ 6.2 M	X					$ 0.0 M	$ 0.0 M
WAN	$ 12.2 M					X	$ 2.4 M	$ 2.4 M
LAN	$ 10.1 M	X					$ 0.0 M	$ 0.0 M
Voice	$ 8.6 M	X					$ 0.0 M	$ 0.0 M
EUC	$ 25.3 M	X					$ 0.0 M	$ 0.0 M
SD	$ 5.7 M	X					$ 0.0 M	$ 0.0 M
Total	**$ 124.5 M**						**$ 10.6 M**	**$ 10.6 M**

TPI Judgment of Opportunity to Market — Potential Savings ($ Millions)

Table 4 Judgment of Opportunity to Market

With regard to the outsourcing market pricing comparison results the following items should also be noted:

- Costs and savings estimates are for one-year run-rates

- Mainframe costs are based on ITS direct costs and are not reflective of ITS billings to agencies

- Certain costs are excluded from the analysis, e.g., hardware costs in Application Servers and EUC and carrier costs in Networks

- Potential savings estimates exclude External Service Provider charges for transition and/or other one time or additional expenses – analysis of alternatives do factor in these costs

- Savings opportunity assumes services are sourced in the aggregate (entire service tower)

- Savings excludes costs associated with completion of a sourcing transaction and / or future Sourcing Management functions – analysis of alternatives do factor in these costs

- A variety of factors determine actual outsourcing market pricing and can include such elements as service level requirements, contract size, attractiveness of deal, "fit", proposed contract terms, etc.

Recommendations

The following recommendations are significantly biased towards improving aggregate INSA IT infrastructure services cost effectiveness - in recognition of the financial challenges facing the State of North Carolina. Further, these recommendations strive to minimize the potential of increasing IT infrastructure costs for an individual Participating Agency as a result of pursuing an aggregate cost reduction. A summary of the recommendations and associated benefits are contained in Table 5 following.

Sourcing Recommendations	
Outsourcing Recommendations	**Primary Benefits**

Outsource Mainframe Services
 	
• External Service Provider provides Mainframe Services from their facilities / data centers using their equipment and staff
    ○ Includes all hardware, software and associated support functions
• Mainframe Disaster Recovery Services included as part of External Service Provider services
	Financial Benefits
	  • Cost savings estimated at $37.2 million over five (5) years
	  • Shifts costs to variable/consumption basis – more efficiently accommodates shifts in demand
	  • Eliminates future capital costs associated with equipment upgrades
	Other Benefits
	  • Upgrade of Service Levels to market norms
	  • Eliminates challenges of maintaining, retaining and attracting staff with requisite skill sets
	  • Elevates operational maturity and process discipline

Sourcing Recommendations	

Outsource WAN Services
 	
• External Service Provider provides managed network services including:
  ○ Network monitoring and management
  ○ Planning and design services
  ○ Network connectivity and operations services
  ○ Network provisioning management
	<u>Financial Benefits</u>
	• Cost savings estimated at $6.2 million over five (5) years
	• 2.2 year pay-back
	<u>Other Benefits</u>
	• Upgrade of Service Levels to market norms
	• Enhanced network monitoring and improved detection and resolution of network issues
	• Enhanced network security
	• Eliminates challenges of maintaining, retaining and attracting staff with requisite skill sets
	• Embedded technology evolution

Consolidation Recommendations	**Primary Benefits**

Consolidate into ITS Service Desk Services from selected agencies (DOR, ESC, DENR[2] and CCPS)
 	
• Consolidation of Service Desks on to a common service delivery framework
  ○ Utilize existing processes to affect consolidation
  ○ Eliminate agency service desks duplicated by previously consolidated agencies
	<u>Financial Benefits</u>
	• Cost savings estimated at $8.9 million over five (5) years
	• Six (6) month pay-back
	<u>Other Benefits</u>
	• Leverages existing ITS resources
	• Rationalize aggregate staff and optimize skill sets
	• Increases volume of incident and service request data to serve as input to continuous improvement programs

Consolidate into ITS Servers from selected agencies (ESC, CCPS, DHHS, DOT and WRC)
 	
• Transfer Service Management responsibilities to ITS including:
  ○ Server monitoring and operations management
  ○ Planning and design services
  ○ Server provisioning management
	<u>Financial Benefits</u>
	• Cost savings estimated at $23.8 million over five (5) years
	• Less than one year pay-back
	<u>Other Benefits</u>
	• Leverages existing ITS resources
	• Rationalizes aggregate staff and creates opportunities for optimizing requisite skill sets
	• Enables physical consolidation into an ITS data center

Table 5 Summary of Recommendations and Benefits

Implementation Considerations

There are no inherent interdependencies across the recommendations. However, synergies may be achieved in sequencing the implementation of the recommendations. For example, concurrent

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[2] DENR IT infrastructure services are in the process of being consolidated into ITS.

execution of the Mainframe and WAN outsourcing procurements will yield lower transacting costs and enable consideration of a single or multiple External Service Provider solution.

An overarching governance framework for IT shared services should be established, either through the reconstitution of the Information Technology Advisory Board, or the creation of a successor body, to provide advice and guidance to the SCIO and ITS with regard to planning, implementing and delivering IT services.

In conjunction with implementing the recommendations, a comprehensive communication and change management program must be developed and implemented to facilitate organization alignment with recommendation goals, and affect the changes needed to attain identified benefits.

Outsourcing Critical Success Factors and Imperatives

A well structured contract is critical, but insufficient to ensure a successful outsourcing relationship. Significant internal transformation will be necessary to enable the outsourcing relationship, along with establishing disciplined sourcing management and governance (Agency and External Service Partner facing), in order to achieve the outsourcing objectives. Additionally the following critical success factors and imperatives must be addressed:

- Support for outsourcing must be evident in both the Governor's Office and the General Assembly.
- A comprehensive communication and change management program must be developed and implemented from the start of the procurement activity.
- Staff responsible for delivering the services to be outsourced must remain accessible through the services transition period, to affect knowledge transfer of the operations from the State to an External Service Provider. This may require precluding staff transfers prior to the completion of transition.
- A dedicated procurement core team must be established that is comprised of relevant subject matter experts and augmented, as appropriate, with key stakeholders.
- A formal Vendor / Sourcing Management Organization (SMO) must be established well in advanced of contract award.

Consolidation Critical Success Factors and Imperatives

Critical to the success of internal consolidation is the establishment of a governing body empowered to ensure the principles of consolidation are followed. The timelines contained in the business cases should be adhered to in order to attain the identified benefits. Additionally the following critical success factors and imperatives must be addressed:

- All identified Participating Agencies' within the scope of the recommended alternative IT infrastructure services must be consolidated to achieve the benefits of the recommendation.
- Larger Agencies must be consolidated first.
- Non-consolidated Participating Agency staff currently delivering the services to be consolidated must remain accessible through the services transition period.

- A comprehensive communication and change management program must be developed and implemented prior to starting consolidation.
- Existing consolidated Participating Agencies customer satisfaction levels must be improved.

IT INFRASTRUCTURE STUDY AND ASSESSMENT (INSA)

B. ASSESSMENT METHODOLOGY

Current-State Baseline Development

Baseline Data Approach

Of the universe of data that may be collected for baseline development, TPI identified a select sub-set of data elements which traditionally yields the highest value proposition in terms of quantity, quality and time required to assemble. The data categories for baseline development included:

- Financial Data
- Volumetric Data
- Service Level Data
- Asset, Leases, Maintenance Contracts and Software License Data
- Technology Profile Data

The data elements within these categories were chosen to reflect those used in commercial and public sector marketplace transactions and allowed for the best comparison of government data with pricing and service level data from these marketplace transactions.

The baseline data framework was uniformly applied across all Participating Agencies, which enabled a consistent and standard comparison to be performed. Data collection was managed by a resource identified as the Single Point of Contact (SPOC) within each Participating Agency.

Financial Data

The source financial data required for analysis and market comparison included:

End User Computing Services	Data Center Services	Telecom Services
Total cost of Desktop Services	Total cost for Mainframe processing services	Total cost for wide area network (WAN) services
Total cost for Service Desk services	Total cost for Unix application server services	Total cost for local area network (LAN) services
	Total cost for Windows application server services Total cost for Utility server services	Total cost for voice telecom services

Table 6 Financial Data Elements

The total cost data was aggregated from major cost components from both a staff and asset perspective.

Extracts from government financial and management reporting systems provided historical and current financial views and were the primary source of this financial data. The data collection framework and

approach captured both direct and indirect costs. The indirect costs included but were not limited to real-estate, utilities, human resources, procurement, and senior management.

Where Participating Agencies were unable to easily split costs across infrastructure areas (e.g. allocating personnel compensation to Desktop Services, Service Desk Services, Server Services, etc.) TPI suggested allocation methods. Subjectivity in the allocation process was minimized by ensuring that the right levels of department/agency leadership were involved in the discussions and that the level of granularity across which costs are allocated was not too small. Additionally, the mechanism of requiring sign-offs of data submissions by agency Executive Business Sponsor, IT Leads, CIO and CFO level personnel served as quality checks on the validity and accuracy of the data.

TPI collected financial data over four fiscal years to understanding the historical trend in IT spend in order to aid in the validation of the current year's actual and projected expense stream. From the data supplied, a two year, month by month, baseline model was created capturing all costs required to support the services. The result of this data collection was the development of the current state financial profile which served as input to the Mark-to-Market analysis and business case development.

Volumetric Data

Volumetric information was collected using TPI provided templates which align the volumetric data with pricing units that are typically used in commercial and public sector outsourcing arrangements. Those templates were distributed to each Participating Agency for population. Categories and data elements included, but were not limited to the set found in Table 7 following.

End User Services	Hosting/Data Center Services
Number of Desktops/Laptops	Installed Mainframe MIPS
Number of Network Printers	Number of CPU hours
Number of Local Printers	Installed GB of Mainframe DASD
Number of Portable Devices	GB of Tape Storage
Number of Telephone Handsets	Number of Infrastructure Servers
Number of Incidents/Issues	GB of Midrange Shared Storage
Number of FTE - Desktop Services	Number of FTE - Data Center Services
Number of FTE - Help Desk Services	
Telecommunication Services	
Number of Sites	Number of Routers
Number of FTE - Voice Telecom Services	Number of PBXs
Number of FTE - Data Telecom Services	Number of Active LAN Ports

Table 7 Volumetric Data Elements

Service Level Data

Each Participating Agency was asked to complete a customized service level data collection template the components of which are based upon industry best practice elements. Those elements are listed in Table 8 following.

Service Level Data Elements	
Performance category	Expected Service Level Performance Target
Service Level Identifier (name)	Minimum Service Level Performance target
Description	Formula used for calculation
Measurement Period	Tools used to capture/measure performance

Table 8 Service Level Data Elements

The result of this data collection was the basis for performing the Service Level Mark-to-Market Assessment.

Assets, Leases, Maintenance Contracts and Software License Data

To support the development of the financial profile, the conclusions drawn in the Operational Assessment and to aid in the development of sourcing solutions, a detailed set of asset related data elements were collected. Information regarding the extent to which the assets were owned by the State or leased was determined as was the current state and value of hardware maintenance agreements supporting in-scope assets. An inventory of Software Licenses Agreements was likewise undertaken.

Technology Profile Data

Information regarding the technologies employed in delivering IT infrastructure services was also collected. The elements associated with Hardware and Software were collected to support analysis and market comparison activities. Data elements included those listed in Table 9 following.

Technology Profile	
Hardware	**Software**
Hardware Manufacturer	Database Software
Model Numbers	Software Version/Release Levels
Hardware Configurations	Operations Software/Tools

Table 9 Technology Profile Data Elements

Operational and Data Center Assessment

Approach

TPI's Operational and Data Center Assessment included a multifaceted approach to gathering information upon which to base conclusions and recommendations. One source was data gathered during a set of technical and business interviews conducted with personnel from each Participating Agency. A second source of information was the service level data. A third included other relevant data collected from the template-facilitated data gathering phase. The fourth source of information was a self-assessment of performance against certain Information Technology Service Management (ITSM) best practices and a fifth was the first hand observations of TPI Advisors during interviews, Data Center and IT support facilities site visits. Additional reviews of relevant documentation (policies, procedures, guidelines, performance reports, etc.) were performed as appropriate.

TPI utilized its infrastructure operational assessment discipline and proprietary tools, customized for use from TPI's assessment and souring methodology, to assemble the data, evaluate the data and to assess relative performance. These tools allowed for TPI Advisors to uniformly translate raw data (both objective and subjective) into a structured assessment. These tools were applied for the Operational and Data Center Assessments including the ITSM component of the Operational Assessment.

With regard to the Service Level Mark-to-Market assessment, TPI complied performance data as described in the Current Baseline Development Section of this Report and evaluated those results in comparison to comparable commercial and public transactions contained in TPI's proprietary data base of sourcing transactions.

Structure

TPI's Operational and Data Center Assessment is structured into two parts:

> ➢ Operational Assessment

> ➢ Data Center Assessment

Within the Operational Assessment component, separate assessments were performed for Service Levels and for IT Service Management.

> ➢ Operational Assessment

> > o Service Level Assessment

> > o IT Service Management (ITSM) Assessment

The core set of components comprising the basis for the Operational Assessment are aligned into four domains of IT performance as illustrated in Figure 5 following.

Four Domains of IT Performance

CUSTOMER DOMAIN
- ► Current Requirements – including In-flight Projects
- ► Future Requirements – including Up-coming Projects
- ► Customer Relationships/Customer Satisfaction

MANAGEMENT DOMAIN
- ► Risk Management
- ► IT Strategy & Business Planning
- ► Funding Issues

OPERATIONAL DOMAIN
- ► ITIL Assessment
- ► Technical & Currency
- ► Delivery Management
- ► Disaster Recovery Capabilities

ORGANIZATIONAL DOMAIN
- ► Organizational Structure/Policies & Procedures
- ► Workforce Planning & Staffing/Turnover/Retention
- ► Service Metrics/SLAs

Figure 5 Domains of IT Performance

Within these four domains of IT performance, TPI explored the following areas:

- ➢ Current and future requirements, including in-flight and upcoming projects;
- ➢ Customer satisfaction and Agency's perceptions of service/support;
- ➢ IT Strategy and alignment to Business Planning;
- ➢ Funding;
- ➢ Risk Management;
- ➢ Technical Currency and Refresh Strategies;
- ➢ Delivery Management Process;
- ➢ Disaster Recovery Capabilities and Testing;
- ➢ Policies and Procedures;
- ➢ Workforce Planning & Staffing/Turnover/Retention;
- ➢ Service Metrics/Service Level Agreements

Assessments, based on a scale of 1 -5, of the relative state of operational maturity were made for each factor within each domain. A three (3) rating on the assessment's five point scale (1-Low / 5-High) indicates general attainment of operational maturity with a rating of 3.5 and above indicating evidence exists of sustained and improving operational maturity.

An example of this assessment is provided in Figure 6 following.

	Customer Domain	Low		Moderate		High
	Factors	1	2	3	4	5
CD - 1	Effectively managing current customer requirements.			3		
CD - 2	Ability to handle current customer demand			3		
CD - 3	Process methods in place to feed service strategy development			3		
CD - 4	Service Levels defined			3		
CD - 5	Service Levels reported to customer		2			
CD - 6	Customer responsiveness to incidents		2			
CD - 7	How does the Client of IT Services rate the IT Services provided to the department.			3		
CD - 8	Customer understanding and acceptance of Service Levels		2			
CD - 9	Regularly engage business to define demand, collect new requirements and review performance feedback			3		
					Factor Score	2.70

Figure 6 Domain Assessment Example

Each domain was assigned an overall weighting as was each factor within each domain. These weightings were assigned by TPI based upon TPI's experience and judgment. During the assessment neither the domain weighting nor the individual factor weightings were known to State participants.

Those weightings applied to the individual factors resulted in the development of the domain and aggregate assessment. An example of this summarization is provided in Figure 7 following.

	Operational Assessment Summary	Low	Moderate			High	Factor Score	Filter Weight	Filter Score
		1	2	3	4	5			
CD	Customer Domain						3.00	30%	0.90
OD	Operational Domain						2.95	50%	1.48
ORG	Organizational Domain						2.80	10%	0.28
MD	Management Domain						2.80	10%	0.28
								100%	
	Compiled Filter Score	2.94							

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.

Figure 7 Operational Assessment Summary Example

The purpose of the Operational Assessment was to provide a vehicle by which the State could more readily understand the current maturity of its operational environment for the purposes of identifying areas for potential improvement. In that regard the results are not to be viewed as representing a comprehensive "audit" of the IT operational environment.

Service Level Assessment

The Service Level Assessment component of the overall Operational Assessment was subject to a separate evaluation. This evaluation took the form of a Mark-to-Market assessment whereby TPI evaluated the Participating Agency's existing service levels as compared with those found in the marketplace. In order to perform this assessment, TPI relied on its unique Service Level data base that contains over 11,000 records from TPI Clients across the world.

Comparison of Service Levels with market range

TPI advises on and collects service level information from industry outsourcing agreements and this information was the primary source of information used in making comparisons between Participating Agencies and the sourcing industry performance in terms of service level achievement.

TPI advises on the largest number of industry sourcing transactions each year and as such provides the most comprehensive collection of industry service level information available for comparison. When selecting industry service levels for market comparisons, TPI's experience indicates there is minimal variation in service level achieved in the commercial or public sector marketplace regardless of organization size and other structural characteristics.

Due to the nature of Service Levels, not all Service Levels were found to have comparables, where comparables were found, each Service Level was compared against those in the data base and assessed to fall in one of five categories:

- ➢ Well Below Market
- ➢ Below Market
- ➢ At Market
- ➢ Above Market
- ➢ Well Above Market

Subsequent to the individual Service Level assessment, an overall summary assessment was provided for each Participating Agency and in the aggregate. See Figure 8 below for an example of the summary assessment.

Figure 8 Service Level Assessment Summary Example

IT Service Management (ITSM) Assessment

The IT Service Management (ITSM) Assessment was based upon an extract of process elements from the ISO/IEC 20000 standard for IT Service Management. A self assessment using a subset of Information Technology Infrastructure Library (ITIL) best practices was conducted for the processes listed in Table 10 following. Upon completion of the initial assessment, TPI reviewed each submission for consistency in evaluation and consistency with TPI's understanding of the level of maturity of those processes as uncovered during the technical and business interviews.

Processes Assessed		
Service Desk	Incident	Problem
Change	Release	Configuration
Service Level	Availability	Capacity
Continuity		Financial

Table 10 ITSM Assessment Processes

Each process area was assigned a weighting as was each factor within each process. These weightings were assigned by TPI based upon TPI's experience and judgment. During the assessment neither the process weighting nor the individual factor weightings were know to State participants. Figure 9 following provides an example of a process weighting factor.

**State of North Carolina
ITSM Assessment
Assessment Model**

	Category Weight	Factor Weights
Service Desk	**Process Weight:**	**9.1**

Process Requirements	60	
A Service Desk exists as the single point of contact for users of IT services.		40
The Service Desk is responsible for facilitating the restoration of IT services when they fail.		10
The Service Desk records all calls.		25
The Service Desk monitors the progress of all incidents and reports the status of incidents to users.		15
The Service Desk closes all incident records upon confirmation with the reporting user that the service has been restored to the user's satisfaction.		10
Sum of Factor Weights		100

Process Recommendations	40	
Service Desk staff are aware of and sufficiently trained on the vital business functions that are supported by IT services.		25
The Service Desk has access to a knowledge base of problems and known errors.		20
The Service Desk has access to the configuration management database.		10
The Service Desk is responsible for escalating incidents and requests according to defined escalation policies and procedures.		25
The Service Desk is responsible for recording and initiating service requests.		10
The Service Desk is able to execute standard changes as defined by change management.		10
Sum of Factor Weights		100

Figure 9 ITSM Process and Factor Weights

The evaluations for each process were aggregated by process and agency and summarized in the aggregate.
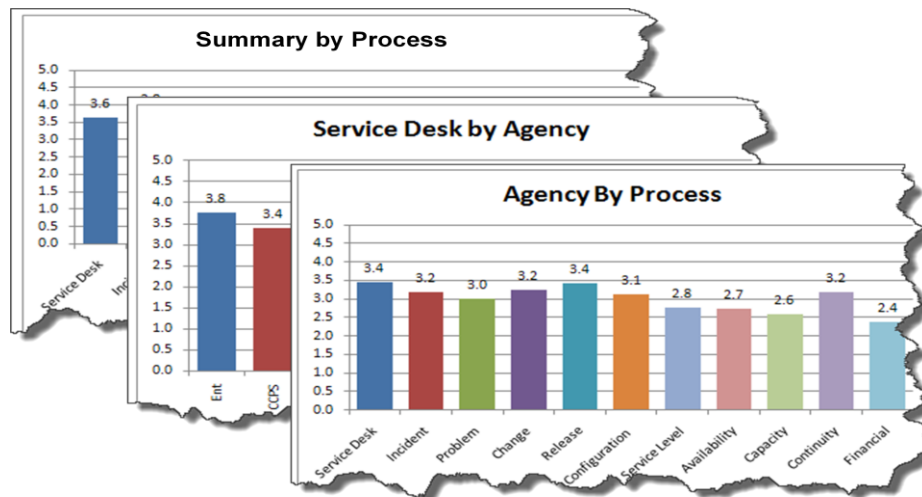
Data Center Assessment

Similar to the approach for other areas of assessment, TPI used a combination of interviews, data collection, and on-site walkthroughs to formulate its conclusions and recommendations. Specific questions were asked and answered involving multiple focus points and areas of interest. Information collected was used to determine TPI's interpretation of the Data Center's capability against two separate but related assessment classifications.

- ➢ Data Center Assessment
    - o Uptime Institute Tier Rating
    - o TPI Data Center Taxonomy

The first is a subset of the standards set by the Uptime Institute's criteria for Data Centers. Table 11 represents the Tier Criteria based on the Uptime Institute's classification of Data Center Tiers.

Uptime Institute Data Center Classification

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (base on Availability)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Table 11 Uptime Institute Data Center Classification

Upon completion of each individual element assessment, TPI determined an overall rating for the Data Center under evaluation.

The second Data Center Assessment is a TPI created market based taxonomy that provides an evaluation regarding certain Data Center characteristics and attributes. Those characteristics and a subset of elements are displayed in Figure 11 following.

Capabilities	Redundancy	Building Structure	Protection & Security	Location
Backup/recovery site - 100 miles? 7 x 24 full time Operation? Manned? Staffing (None, 1-shift, 24X7) Site Availability (99.67%, 99.75%, 99.98%, 99.99%) Annual Site Downtime Availability tracked automatically? Is there adequate floor space for planned growth? Well Organized? (e.g., equip, cables, storage, office space) etc....	Dual Power feeds from separate sources? How many paths? Are paths redundant? Equipment Redundancy? Redundant supply for Redundant HVAC? Separate UPS for conditioned power? Entire Bldg has Backup Generators - Yes/No? Diesel stored and available? Dual entrances for phone and data services? Building has access from at least 2 carriers etc…	Equip Rm located away from windows? Building is hardened? Loading Dock able to accommodate large equip? Equip Rm have entry ramp? Building meets local fire codes? Maintained, cleaned, no structural issues? Building is hardened to client needs? Equipment in Racks - - Yes/No etc…	Friendly fire extinguishing system? Automatic activated fire alarm system? Access to Data Center controlled and limited? Security checkpoints in shipping area? Automated badge systems? Security procedures in place/followed by Staff? Adequate security alarm system? Cameras located both outside and within Building? No external signs/markings building is a Data Center? etc…	Easy access to Data Center? Located where resources / required skills available? Area around building safe, close to emergency services? Not close to items of risk, e.g. chemicals, gas Location subject to harmful weather, e.g. hurricanes, earthquakes, flood etc…

Figure 11 TPI Taxonomy Data Center Characteristics and Attributes

Each element was scored on a five (5) point scale (1-Low / 5-High). Each attribute within each element was assigned a weighting. These weightings were assigned by TPI based upon TPI's experience and

judgment. During the assessment neither individual factor weightings nor the specific categories were know to State participants. Figure 12 following provides an example of factor weightings.

		Capabilities	Factor Weighting
CAP-1		There is a backup / recovery site for this facility that is more than 100 miles away	20%
CAP-2		The facility is a 7 x 24 full-time operation	20%
CAP-3		Availability is tracked using automated tools. The historical Availability meets the client's requirements.	10%
CAP-4		The facility meets the Tier level requirements of the client (based on the Uptime Institute Data Center Tier definitions)	15%
CAP-5		Physical Capacity Planning is performed on an ongoing basis	15%
CAP-6		The Building has adequate floor space to support the client's expected future growth	10%
CAP-7		The Data Center is well organized and documented (e.g., equipment, cables, storage, office space)	10%
			100%

Figure 12 TPI Taxonomy Factor Weightings Example

Each of the individual categories were aggregated, the result of which was an overall assessment for the Data Center. An example of the summary follows in Figure 13

	Data Center Assessment Areas	Low		Moderate		High	Filter Values	Filter Weighting	Score
		1	2	3	4	5			
CAP	Data Center Capabilities						3.50	20%	0.70
RED	Redundancy Features						3.55	20%	0.71
BLD	Data Center Building Structure						3.20	20%	0.64
P&S	Available Protection and Security						3.45	20%	0.69
LOC	Data Center Location						3.20	20%	0.64
								100%	3.38
						Overall Score	3.38		

Figure 13 TPI Taxonomy Summary Assessment Example

Neither Data Center Assessments are intended to be an assessment to qualify the Data Centers or facilities, but rather to provide considerations for client awareness and should be viewed in the context of identifying areas for improvements.

Comparison of Current Costs to Sourcing Market Price (Mark-to-Market)

Mark-to-Market Comparison Approach

Baseline Assessment Input

The IT Infrastructure Baseline and the Operational Assessments were two of the key inputs that underpin the Market-to-Market sourcing assessment analysis for each IT Infrastructure Service.

Participating Agency data provided the baseline from which costs and performance levels were assessed against market comparables. Data was organized and aligned with market ranges to enable service, performance and cost to be compared on a like-for-like basis with resource and pricing units used by leading External Service Providers.

How Market Place Data Points were developed

TPI has developed a proprietary methodology for a unique form of market price comparison which is termed Mark-to-Market (M2M). Underpinning the methodology is TPI's Financial Data Repository (FDR) which TPI believes to be the largest and most current source of market data. This market data has been collected through hundreds of competitive outsourcing transactions in which TPI has been involved. TPI systematically stores price point and contextual information based on past sourcing engagements. The FDR contains over 1,000 individual data points that were queried to extract comparables. Figure 14 following illustrates the elements of the Financial Data Repository.

TPI's Financial Data Repository

- The strength of the TPI M2M is based on the comprehensive quality, volume and relevance of TPI's comparison data

- TPI systematically stores pricing and other contextual data from the 100 plus completed transactions we advise on each year into our Financial Data Repository (FDR).

- Due to the competitive and highly sensitive nature of this data FDR data is very closely held within TPI with only a few Advisors having access, Client and Supplier confidentiality on pricing data is scrupulously maintained

FDR Structure — Transaction Data — Tower / Geography Data — Service Details Record: Scope, Scale, Geography, Financials, Resources, Key Ratios

IT Outsourcing Records

    Mainframe

    Servers

    End User Computing   Business Process Outsourcing Records

    Help Desk   Finance & Accounting

    Network   Human Resources

    Applications Development   CRM & Call Centers

                          Purchasing
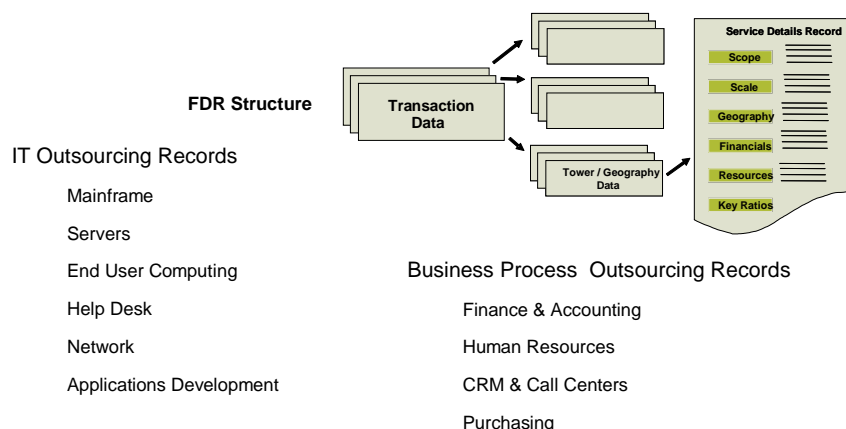
Figure 14 Financial Data Repository

TPI's Mark-to-Market is an evolutionary step beyond simple benchmarking techniques. Unlike other forms of benchmarking which drive "peer group" comparisons, TPI's Mark-to-Market enables

performing a more relevant comparison by comparing the Participating Agencies' service level and financial performance to prevailing market service levels and prices. Through the use of the data stored in the repository, along with knowledge and familiarity of current market conditions, TPI was able to determine the positioning of Participating Agencies' cost of providing services against what the sourcing market can provide.

Built from the financial base case and its operational metrics, the Mark-to-Market analysis compared unit prices for services, against market comparisons of environments which are similar to the Participating Agencies' current state. TPI's Mark-to-Market is a quantitative analysis that rationalizes the marketplace data with specific characteristics of the environment and is expressed as a "TPI Opinion" of the overall size of the opportunity both in terms of cost saving opportunity through outsourcing and service improvement opportunity through associated contracted service level agreements with an External Service Provider.

The Mark-to-Market appropriately established the hurdles for an in-sourced option by comparison to the best that could be achieved in the market as opposed to other, possibly less well performing peers. Alternatively it drives a compelling case for evaluating outsourcing options.

Mark-to-Market Report

TPI has prepared an industry proven Mark-to-Market report which includes a summary of the range of financial savings opportunity by service tower and by Participating Agencies. The M2M financial summary is a series of comparisons and observations which served as input for the wider assessment. When selecting data points from the TPI Financial Data Repository against which to compare current unit costs and service level data, a number of characteristics were considered including; scope, scale; complexity; service levels, contract terms, geographic dispersion, asset treatment, supplier competitiveness, etc. By making a selection from the FDR based on these attributes, representative peer groups were identified from which a high and low range was established for each metric comparison. An example of the summary mark-to-market analysis is shown in Figure 15 following
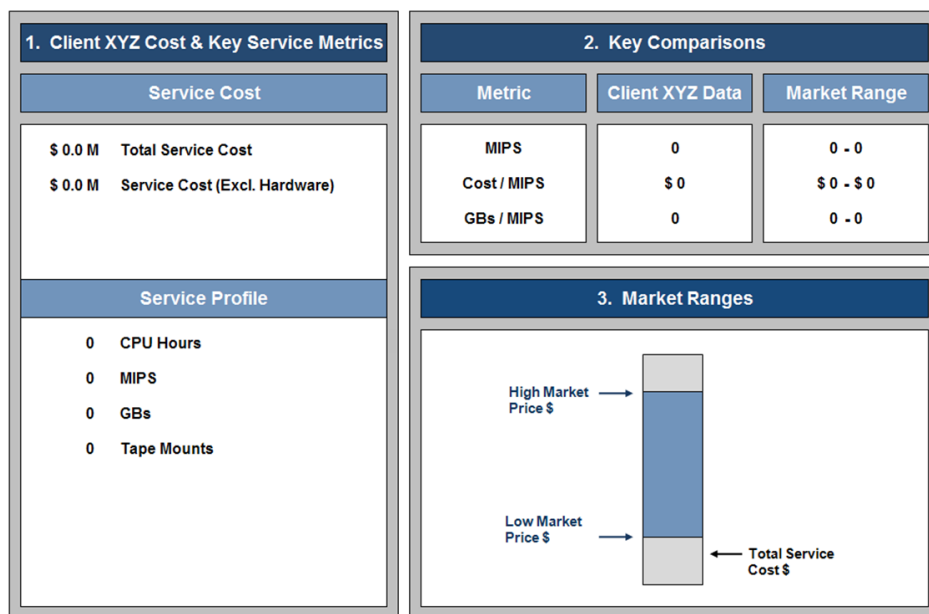
Figure 15 Summary Mark-to-Market Example

The M2M was used to indicate the potential opportunity for savings from outsourcing thereby setting the internal financial challenge should the services be kept in house or alternatively setting the target savings for external options. From TPI's extensive experience of market pricing of outsourcing contracts, the firm believes that pricing is not linear and the circumstances and terms negotiated in specific situations vary extensively and affect the prices that are bid. Also, for various reasons, service providers do not always bid their lowest available price.

The assessment of market price is therefore part science, based on historical data and part judgment, based on circumstantial and other considerations. For these reasons, the M2M result is provided as a range. Actual market prices are used but not necessarily the most aggressive.

TPI does not believe that means, medians, upper quartiles, etc. should be applied to market price data. TPI does not offer these calculations or recommend that the State in any way try to infer absolute positioning from the data provided.

Section C Assessment Results - Comparison of Current Costs to Sourcing Market Price Summary, of this Report contains a summary of the Mark-to-Market performed and Appendix C – Mark-to-Market Report contains the full Mark-to-Market report.

IT Infrastructure Study and Assessment (INSA)

C. Assessment Results

Current State Baseline Summary

This section of the document represents the summarization of the INSA baseline data collection for the State of North Carolina. All data was extracted from the Agency and ITS submissions.

See Appendix A for the Baseline Report.

Hardware Leases

Hardware Leases associated with the in-scope services are as follows:

There are 149 Hardware Leases associated with in-scope services with a total cost of the leases being $522,010 over the life of the term.

Hardware Leases			
Type	**Agency**	**Cost During Contract Term**	**Count**
Other	Department of Environment and Natural Resources	$ 3,210	3
Print Services	Department of Commerce	$ 30,061	2
	Department of Environment and Natural Resources	$ 46,038	6
	Department of Health and Human Services	$ 296,087	58
	Department of Juvenile Justice and Delinquency Prevention	$ 137,609	76
	NC Wildlife Resource Commission	$ 6,867	1
	Office of State Budget and Management	$ 30,588	2
Server	Department of Transportation	$ 1,550	1
Grand Total		**$ 552,010**	**149**

Table 12 Hardware Leases Costs

Software Licenses

Software Licenses associated with the in-scope services are as follows:

Table 13 shows the Software License cost over the contract term, the number of licenses, the number of license contracts, and the tower. There are 3,037 individual Software License contracts with a total of 696,278 licenses. The majority of the Software Licenses are associated with the End User Computing tower. The total value of the Software licenses is $74,046,403 over the life of the term.

Distribution of costs by Service Tower is as follows:

Software Licenses			
Service Tower	Cost During License Term	Number of Licenses	Number of Software License Contracts
EUC	$ 19,757,436	501,771	1,659
Server	$ 8,523,378	145,292	933
Other	$ 4,020,063	28,686	108
Network Data	$ 786,206	17,462	45
Network Voice	$ 1,847,464	2,808	25
Service Desk	$ 53,439	205	8
Mainframe	$ 39,057,749	50	255
Print Services	$ 668	4	4
Grand Total	**$ 74,046,403**	**696,278**	**3,037**

<div align="center">Table 13 Distribution of Software License Costs by Tower</div>

Table 14 shows the Software License cost over the contract term, the number of licenses, the number of license contracts by Vendor. The majority of the costs of Software Licenses are with IBM, Microsoft, CA, and Dell. Ninety-four percent of the participating Agencies' spend is with the top 24 vendors. The top 24 Vendors account for 86% of all the Software Licenses and 47% of all contracts.

Software Licenses			
Vendor	Cost During License Term	Number of Licenses	Number of Software License Contracts
IBM	$ 25,166,163.04	11,718	263
Microsoft	$ 17,256,464.13	201,743	382
CA	$ 11,409,506.88	79	17
Dell	$ 3,217,815.14	26,820	31
Software House International	$ 1,217,970.45	18,520	81
Siemens	$ 1,044,305.63	1,487	7

Software Licenses			
Vendor	Cost During License Term	Number of Licenses	Number of Software License Contracts
SAP	$ 878,091.38	16,489	36
Alphanumeric Systems, Inc.	$ 865,494.01	14,524	10
BMC	$ 841,774.00	23,478	4
SumTotal System (Pathlore)	$ 750,000.00	1	1
Symantec	$ 667,244.96	13,244	76
Red Hat	$ 646,291.30	255	17
Allen Systems Group	$ 640,000.00	2	1
Avaya	$ 633,656.00	532	17
CDW	$ 622,068.55	17,383	27
SAS	$ 600,897.00	82	37
Not known or available	$ 517,046.00	5	5
Systemware, Inc.	$ 489,444.00	1	14
Lucent	$ 482,314.00	1,466	3
Adobe	$ 337,591.81	30,728	233
Softbase	$ 316,193.00	2	1
Lumension	$ 305,534.00	71,912	7
LANDesk	$ 301,031.24	16,695	10
Kyran	$ 258,943.00	2	1
On Point Technology, Inc.	$ 248,750.00	3	1
Sub Total	**$ 69,714,589.52**	**467,171**	**1,282**
All Other	**$ 4,331,813.20**	**229,107**	**1,755**
Grand Total	**$ 74,046,402.72**	**696,278**	**3,037**

Table 14 Software Licenses by Vendor

Hardware Maintenance

Hardware Maintenance Contracts associated with the in-scope services are as follows:

Table 15 shows the Hardware Maintenance cost over the contract term and the number of agreements by participating Agencies. There are 831 Hardware Maintenance Contracts with a total spend of $19,114,848 over the life of the term.

Hardware Maintenance		
Agency	Total Cost During Contract Term	Number of Contracts
ITS (includes SCIO Office)	$ 13,386,166	408
Department of Health and Human Services	$ 2,056,655	174

Hardware Maintenance		
Agency	Total Cost During Contract Term	Number of Contracts
Crime Control and Public Safety	$ 1,109,468	22
Department of Transportation	$ 1,013,810	10
Employment Security Commission	$ 680,310	28
Department of Revenue	$ 577,704	11
Dept. of Corrections (DOC)	$ 121,630	4
Department of Environment and Natural Resources	$ 45,761	45
Department of Commerce	$ 33,685	113
NC Industrial Commission	$ 31,933	2
Office of State Personnel	$ 25,665	4
NC Wildlife Resource Commission	$ 19,118	5
Commissioner of Banks	$ 8,712	1
Department of Juvenile Justice and Delinquency Prevention	$ 2,830	3
Department of Cultural Resources	$ 1,400	1
Grand Total	$ 19,114,848	831

Table 15 Hardware Maintenance Costs

Table 16 shows the Hardware Maintenance cost over the contract term and the number of contracts by tower. The most hardware maintenance spend is associated with the Network Data and Server towers.

Hardware Maintenance		
Service Tower	Cost During Contract Term	Number of Contracts
Network Data	$9,076,791	76
Server	$5,161,103	330
Mainframe	$1,485,267	140
Print Services	$1,290,322	233
Network Voice	$1,253,725	22
EUC	$614,689	7
Other	$176,539	22
Server & EUC	$56,412	1
Grand Total	$19,114,848	831

Table 16 Hardware Maintenance Costs by Tower

Table 17 shows the cost of the Hardware Maintenance agreements over the term, and the number of contracts held by the Vendor for all participating Agencies. There are Hardware Maintenance contracts with 104 Vendors and the top 12 account for 87% of the spend.

Hardware Maintenance		
Vendor	**Total Cost During Contract Term**	**Number of Contracts**
Cisco	$ 6,843,701	11
`IBM	$ 2,629,636	136
Oracle	$ 1,805,296	7
Motorola	$ 808,618	8
OCE North America	$ 746,405	2
Avaya	$ 720,303	7
Hewlett Packard	$ 608,803	307
Intergraph	$ 594,334	1
Coleman Technologies	$ 510,885	3
Century Link	$ 486,056	9
EMC	$ 431,596	5
NWN Corporation	$ 403,627	9
Sub Total	**$ 16,589,261**	**505**
All others	**$ 2,525,587**	**326**
Grand Total	**$ 19,114,848**	**831**

Table 17 Hardware Maintenance Costs by Vendor

3rd Party Contracts

TPI classifies all Third Party contracts as contracts for all other services that the participating Agencies consume in support of the in scope infrastructure that are not hardware, software or lease contracts. Examples would be contracts for voice and data communication services or janitorial services consumed in support of the IT infrastructure. Third Party Contracts associated with the in-scope services are as follows:

Table 18 shows the Third Party contract cost over the contract term and the number of contracts by tower. There are 598 Third Party Contracts with a total spend of $310,293,910 over the life of the term.

Third Party Contracts		
Service Tower	**Cost During License Term**	**Number of Contracts**
Network Voice	$ 104,882,150	70
Network Data	$ 91,124,640	102
Server	$ 59,429,564	193
Mainframe	$ 37,428,874	24
Other	$ 9,523,091	108
EUC	$ 6,784,108	84
Print Services	$ 1,114,896	15

Third Party Contracts		
Service Tower	**Cost During License Term**	**Number of Contracts**
Service Desk	$ 6,588	2
Grand Total	**$ 310,293,910**	**598**

Table 19 shows the Third Party Contract cost over the contract term and the number of contracts by participating agencies. ITS holds the most contracts with a total spend of $248,266, 941 over the life of the term

Third Party Contracts		
Agency	**Cost During Contract Term**	**Number of Contracts**
ITS (includes SCIO Office)	$ 248,266,941	199
Department of Transportation	$ 46,850,710	7
Department of Health and Human Services	$ 5,938,053	306
Department of Environment and Natural Resources	$ 2,269,180	19
Office of State Budget and Management	$ 2,184,734	4
Employment Security Commission	$ 1,414,879	14
Department of Commerce	$ 1,191,284	10
Crime Control and Public Safety	$ 810,645	9
NC Wildlife Resource Commission	$ 460,686	3
Department of Revenue	$ 336,905	9
Department of Juvenile Justice and Delinquency Prevention	$ 182,210	5
Department of Administration	$ 111,375	2
Department of Justice	$ 108,607	2
Department of Corrections	$ 73,447	5
Office of State Personnel	$ 57,817	1
NC Industrial Commission	$ 13,941	1
Department of Crime Control and Public Safety	$ 13,336	1
Department of Cultural Resources	$ 9,160	1
Grand Total	**$ 310,293,910**	**598**

Table 20 shows the Third Party Contracts by Vendor, the total cost of the contracts over the term, and the number of contracts held. The largest contracts are with AT&T, Verizon, Century Link, IBM and DukeNet Communications.

Third Party Contracts		
Vendor	**Cost During Contract Term**	**Number of Contracts**
Multiple Vendors	$ 63,100,000	2
AT&T	$ 52,380,358	22
Verizon	$ 47,497,211	4
Century Link	$ 22,005,473	8
IBM	$ 20,573,270	17
DukeNet Communications	$ 18,700,916	9
ACS	$ 9,603,000	1
SAS	$ 8,941,208	14
CA Incorporated	$ 8,064,336	1
Alltel Cellular	$ 8,034,676	1
Oracle	$ 6,075,335	12
Sprint Wireless	$ 4,760,989	1
Microsoft	$ 2,428,063	5
ESRI	$ 2,161,652	11
Sub Total	**$274,326,487**	**108**
All Others	**$ 35,967,423**	**490**
Grand Total	**$310,293,910**	**598**

Table 20 Third Party Contracts by Vendor

Locations

Locations - Overall

Table 21 shows the type of locations and the number of locations by Agency. There were 5,732 locations reported of which 46 were identified as data centers locations.

Quantity & Type of Locations							
Agency	**Data Center**	**Home**	**Mobile Data Tower Site**	**Office**	**Other**	**Remote**	**Grand Total**
ITS	4	191		1,715	8		**1918**
DHHS	11	454		421	5		**891**
WRC	2	168			607	39	**816**
DOT	10			526			**536**
CCPS	6	1	67	149	202		**425**
DOC	3	13		78	2	254	**350**

Quantity & Type of Locations							
Agency	**Data Center**	**Home**	**Mobile Data Tower Site**	**Office**	**Other**	**Remote**	**Grand Total**
DOR	1	213		16			**230**
DENR	7			210			**217**
DJJDP	1			127	2		**130**
ESC	1			25		66	**92**
DOA				45	6		**51**
COM		1		3	1	29	**34**
NCIC		20		1			**21**
GOV				7			**7**
DCR				5			**5**
OSP				2	1		**3**
ABC				1		1	**2**
LtGov				2			**2**
COB				1			**1**
OSBM				1			**1**
Grand Total	**46**	**1,061**	**67**	**3,335**	**834**	**389**	**5732**

Table 21 Locations by Participating Agency

Locations – Data Centers

Table 22 shows the number of Data Center locations by city and the amount of total square footage as well as total raised floor square footage in total. The 46 Data Centers are located in 15 cities with the highest concentration in Raleigh. There is a total of 176,729 sq feet reported of which 45,081 is raised floor. The agencies also reported there were 3 out-of-state data center locations.

Data Center Locations and Floor Size			
Agency & Data Center City	**Total Sq. ft**	**Raised Floor Sq. ft**	**Quantity of Sites**
Raleigh	121,357	29,533	31
Forest City	53,008	15,008	2
Asheboro			1
Butner	726	0	1
Cary			1
Charlotte	540	540	1
Dallas, TX			1
Goldsboro	321	0	1
Greensboro			1
Greenville	155	0	1

Data Center Locations and Floor Size			
Agency & Data Center City	**Total Sq. ft**	**Raised Floor Sq. ft**	**Quantity of Sites**
Lenoir	252	0	1
Morehead City	100		1
Morganton	270	0	1
Phoenix, AZ			1
Sacramento, CA			1
Grand Total	**176,729**	**45,081**	**46**

Table 22 Data Center Locations and Floor Size

Table 23 shows the total square footage, the raised floor square footage, and the number of sites reported by participating Agency.

Data Center Floor Size			
Agency	**Total Sq. ft**	**Raised Floor Sq. ft**	**Quantity of Sites**
DHHS	5,821	2,630	11
DOT	4,140	4,140	10
DENR	1,289	351	7
CCPS	3,443	1,133	6
ITS	154,466	30,339	4
DOC	1,175	768	3
WRC	675	0	2
DOR	1,220	1,220	1
ESC	4,500	4,500	1
DJJDP			1
Grand Total	**176,729**	**45,081**	**46**

Table 23 Data Center Floor Size

IT Assets

Table 24 shows the overall average age of assets is 3.7 years.

Type of Asset	**Average Age**
EUC Assets	3.5
Network Data Assets	3.6
Servers Assets	3.7
Network Voice Assets	3.9
Overall Average	**3.7**

Table 24 Average Age of Assets

Figure 16 shows the average age of assets for each type.

Average Age of Assets

Asset Type	Years
Network Voice Assets	3.9
Servers Assets	3.7
Network Data Assets	3.6
EUC Assets	3.5
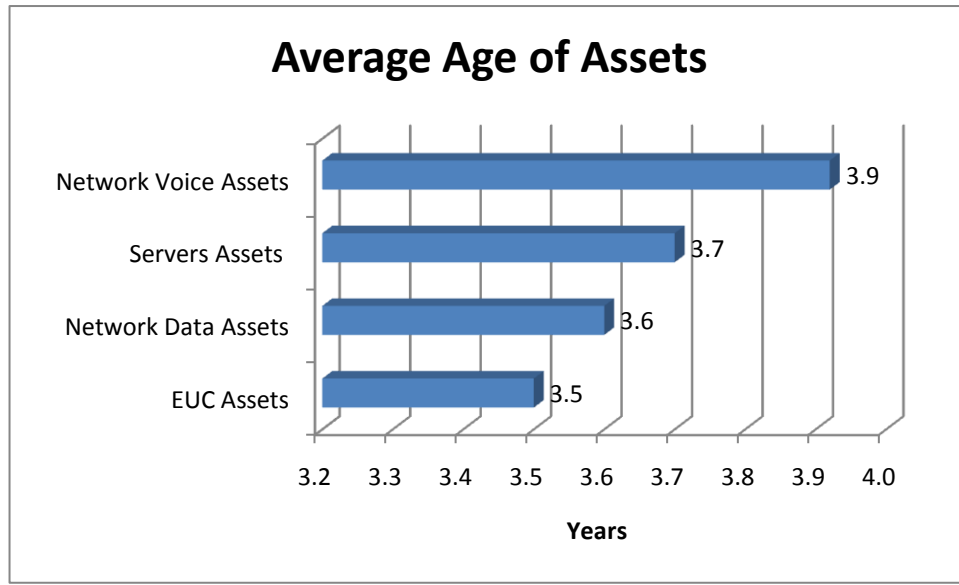
Figure 16 Average Age of Assets

Mainframe

ITS reported the following mainframe assets. The two mainframe systems that are located in the Eastern Data Center service as the primary systems and the mainframe located in the Eastern Data Center is used for data replication and serves as the disaster recovery (DR) system. It is worth noting that the DR system can be 'scaled up' to handle the full load in the event of a disaster.

Table 25 shows the number of MIPS installed by the System name for the respective Data Center.

Mainframe Systems			
Data Center	**City**	**System Name**	**MIPS Installed**
Eastern Data Center	Raleigh	CPC1	2,255
Eastern Data Center	Raleigh	CPC2	2,255
Western Data Center	Forest City	Disaster Recovery Box	580

Table 25 Mainframe Systems

Table 26 shows the number of Installed and Used Gigabytes for the Mainframes.

Mainframe Storage		
Storage	**Installed (in GBs)**	**Used (in GBs)**
HDS	125,000	85,000

Table 26 Mainframe Storage

Servers

Hardware Counts

Server Assets associated with the in-scope services are as follows:

Table 27 shows the number of Physical and Virtual Servers reported by the participating agencies. Of the 4,680 Server reported assets, 3,467 are Physical Servers.

Type of Server	Count
Physical Server	3467
Virtual Servers & Instances	1213
Grand Total	**4680**

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Table 27 Server Hardware Count

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Figure 17 shows that 26% of the Server environment has been virtualized.

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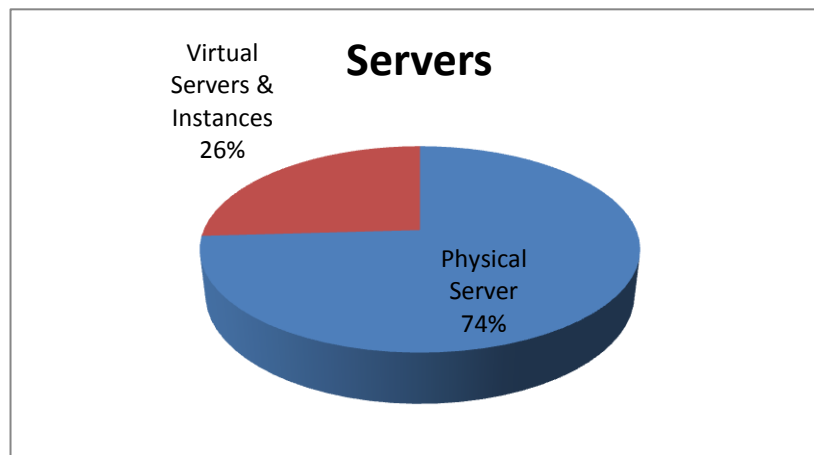
Figure 17 Server Virtualization Percent

</div>

Table 28 shows the overall average age of the Server assets is 3.7 years. Of the 4,680 Server reported assets, the average age of the Physical Servers is 3.8 years.

Type of Server Asset	Average Age
Physical Server	3.8
Virtual Server	2.2
Overall Average	**3.7**

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Table 28 Average Age of Servers

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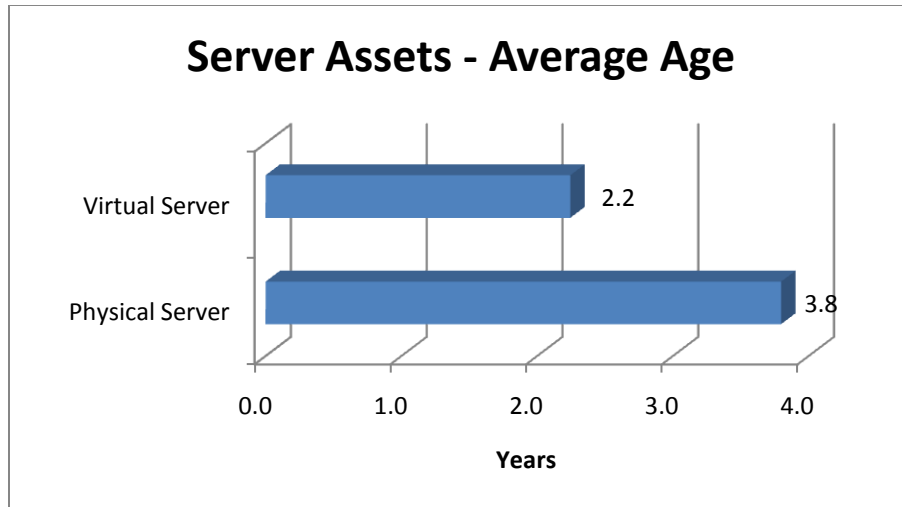
Figure 18 Average Age of Servers

Table 29 shows the number of servers reported by the participating Agency.

Agency	Servers Counts
ITS	1070
DHHS	947
Other Agencies	513
DENR	393
DOR	363
DOT	325
ESC	286
DOC	235
CCPS	165
DOA	104
WRC	71
DCR	57
Commerce	39
JJDP	36
OSBM	34
NCIC	13
ABC	8
COB	8
GOV	8
OSP	4
LtGov	1
Grand Total	**4680**

Table 29 Servers by Agency

Types

Table 30 shows the number of Servers by type. There are 4,680 Servers of which 2,718 are Windows.

Server Type Counts	
Server Type	**Counts**
Windows	2718
UNIX/LINUX	991
Other	530
Novell	316
AIX	125
Grand Total	**4680**

Table 30 Summary of Servers by Operating System

Figure 19 show the percentage of Servers by type.
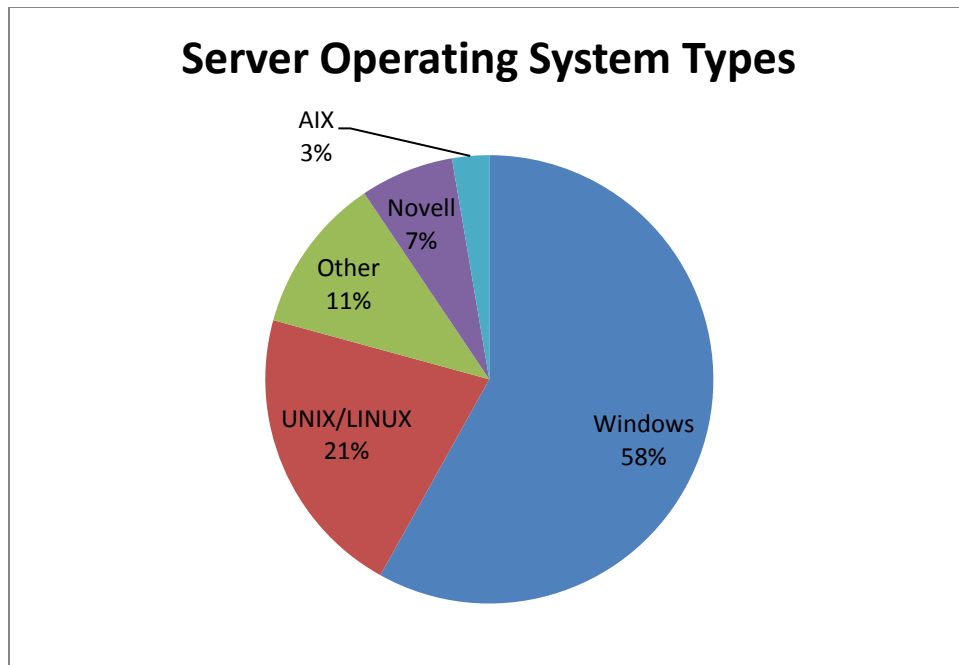
Figure 19 Distribution of Servers by Operating System

Operating Systems

Table 31 shows the number of servers by operating system type. There are twelve (12) versions of the Windows operating system and six (6) versions of the Novell operating system.

Supported OS Counts	
Operating System Types	**Counts**
(blank)	347
AIX	129
Citrix	7
Embedded OS	13
Netware	40
Novel l5.1 SP7	2
Novell	283
Novell 5.1 SP7	12
Novell 5.1 SP8	2
NOVELL 6.5	4
Novell 6.5 SP8	2
Other	62
Solaris	367
UA	4
Unix/Linux	524
VM Ware	149
VMWARE 4.1	11
Vmware ESX etWare / Windows	2
WIN NT4 Workstation	1
WIN SERVER 2008	8
WIN XP PRO	47
Windows	62
Windows 2000	161
Windows 2003	2047
Windows 2003 R2	1
Windows 2008	240
Windows 2008 R2	8
Windows NT	63
Windows XP	80
WinNT	1
XEN	1
Grand Total	**4680**

Table 31 Operating System Distribution

Storage

Table 32 shows the available storage and used storage by Participating Agency.

In addition to local disk storage directly connected to servers, fifteen of the twenty INSA Agencies reported using some type of SAN or NAS shared storage. There are 2,270,083 Gigabytes of SAN/NAS storage of which 1,537,140 Gigabytes is being used.

SAN and NAS Storage by Agency		
Type of Storage	Avail Storage (GBs)	Used Storage (GB)
ITS	1,724,607	1,236,686
DOR	125,900	84,300
DHHS	112,260	45,428
DCR	94,808	51,799
DOT	87,000	55,000
CCPS	65,000	38,660
DOC	21,000	16,600
Commerce	15,687	6,295
ESC	15,000	
DENR	4,447	1,422
JJDP	1,086	445
COB	686	91
NCIC	686	
ABC	685	89
Other Agencies	645	43
WRC	586	283
Grand Total	2,270,083	1,537,140

Table 32 SAN/NAS Storage by Participating Agency

End User Computing (EUC)

Hardware Counts

Table 33 shows the number of assets by equipment type for the End User Computing (EUC) tower. There are 41,753 Desktops and 15,531 Laptops in the environment.

EUC Hardware Counts	
Equip Type	Quantity
Desktops	41,753
Laptops	15,531
Local Printers	8,670
Network Printers	7,903
Appliance PC	1,358

Table 33 End User Hardware Counts

Figure 20 shows the percentage of desktops, laptops and appliance PC's.

Desktop, Laptops, Appliance PCs

Appliance PC
2%

Laptops
27%

Desktops
71%
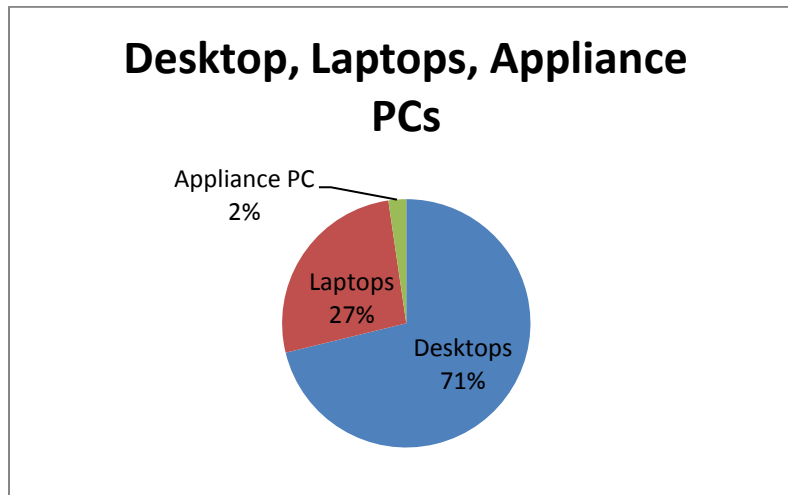
Figure 20 Percentage Distribution of End User Computing Workstations

Figure 21 shows the percentage of network and local printers.

Printers

Network
Printers
48%
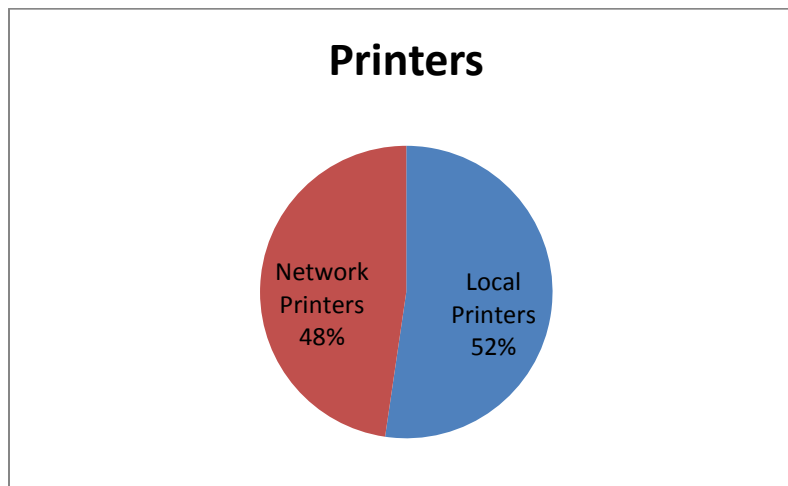
Local
Printers
52%

Figure 21 Percentage Distribution of Printers

Table 34 shows the overall average age of the EUC assets is 3.5 years. Local printers have the highest average age.

Type of EUC Asset	Average Age
Local Printers	4.9
Network Printers	4.2
Desktops	3.4
Laptops	2.9
Overall Average	**3.5**

Table 34 Average Age of End User Computing Assets

EUC Assets - Average Age

Asset	Years
Laptops	2.9
Desktops	3.4
Network Printers	4.2
Local Printers	4.9
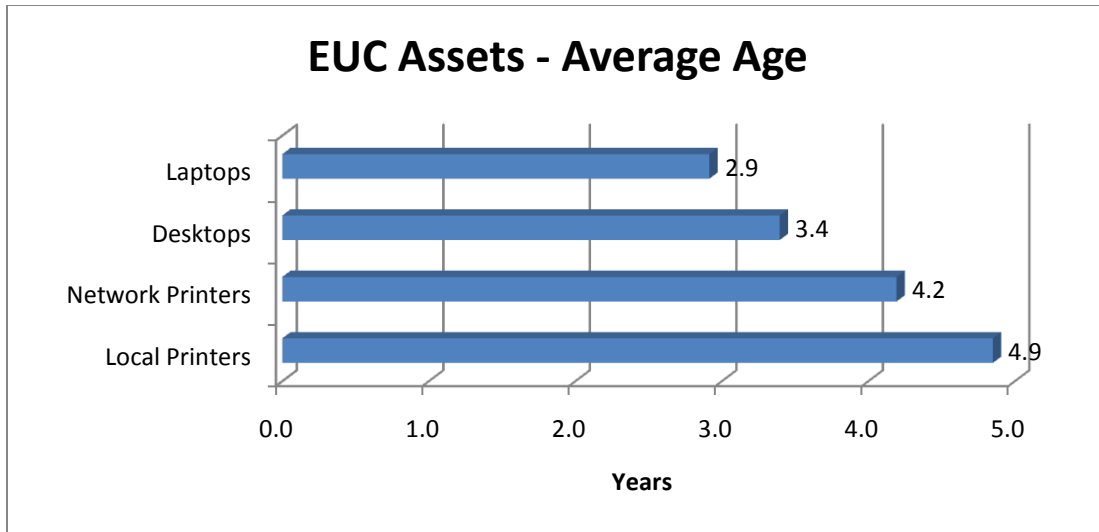
Figure 22 Average Age of End User Computing Assets

Table 35 shows the average age of the laptops by participating Agency.

Agency	Average Age of Laptops
WRC	4.0
DENR	4.0
DHHS	3.8
CCPS	3.4
DOR	3.4
DCR	3.1
ESC	2.9
DJJDP	2.9
Commerce	2.7
DOT	2.6
OSP	2.6
ITS	2.5
DOC	2.4
OSBM	2.4
DOA	2.3
NCIC	2.2
COB	2.1
Gov	2.0
LtGov	2.0
ABC	1.7
Overall Average	**2.9**

Table 35 Age of Laptops by Agency

Table 36 shows the average age of the desktops by participating Agency.

Agency	Average Age of Desktops
DENR	5.1
DHHS	4.7
DOR	4.4
OSBM	4.0
ESC	3.9
CCPS	3.9
Commerce	3.8
ABC	3.8
DJJDP	3.8
WRC	3.7
Gov	3.6
DCR	3.5
DOA	3.5
DOC	3.5
OSP	3.2
NCIC	3.2
COB	3.1
ITS	3.1
DOT	2.9
LtGov	2.0
Overall Average	**3.4**

Table 36 Age of Desktops by Agency

Table 37 shows the average age of the network printers by participating Agency.

Agency	Average Age of Network Printers
WRC	6.3
OSP	6.3
COB	6.0
CCPS	5.4
DHHS	5.1
ESC	4.6
Commerce	4.5
ABC	4.3
DENR	4.3
DOR	4.0

Agency	Average Age of Network Printers
DOT	4.0
DJJDP	3.8
DOC	3.5
NCIC	2.6
Overall Average	**4.2**

Table 37 Age of Network Printers by Agency

Table 38 shows the average age of the local printers by participating Agency.

Agency	Average Age of Local Printers
WRC	5.6
OSP	5.4
Commerce	5.3
DHHS	5.1
ESC	5.0
DENR	4.5
DOR	4.3
CCPS	4.0
DJJDP	3.2
NCIC	3.0
DOT	2.9
ABC	2.0
Overall Average	**4.9**

Table 38 Average Age of Local Printers

Desktop and Laptop OS Counts

Table 39 shows the number of operating systems used in the laptop and desktops for the participating agencies. Windows XP is the predominant operating system for the Desktop/Laptop environment.

Laptop and Desktop OS Counts	
OS Type	**Quantity**
Windows XP	45,918
Windows XP Professional	9,703
Unavailable, not known, not reported	1846
Windows 2000	395
Windows Vista	372
Windows	239
Windows 7	79
Mac OS	55
Unix/Linux	26

Laptop and Desktop OS Counts	
OS Type	**Quantity**
Windows 95, 97, 98, NT, 2003	9
Grand Total	**58,642**

Manufacturers

Table 40 shows the number of EUC assets provided by the respective manufacturer. There are 254 reported Equipment Manufacturers of End User Computing equipment. The top 9 Manufacturers account for 90% of the devices.

EUC Equipment Manufacturers and Counts	
Manufacturer	**Quantity**
Dell	28,702
HP	28,005
Lexmark	4,364
Lenovo	4,084
Various	2,742
Compaq Computer Corporation	2,337
Unavailable, not known, not reported	2,049
Pansonic	1,703
Gateway	1,146
Sub Total	**75,132**
All Other	**8,324**
Grand Total	**83,456**

Network Data

Network Data Equipment Counts

Table 41 shows the number of devices by type reported by the participating agencies for the Network Data tower. There are a variety of devices supported within the Network Data Tower.

Data Network Equipment	
Type of Equipment	**Quantity**
Switch or Hub	7,458
Router	3,239
UPS	1,839
Other	1,466
Firewall	1,088
Wireless	914
Load Balancer	57

Data Network Equipment	
Type of Equipment	**Quantity**
Tape	8
VPN	2
NAS	1
Grand Total	**16,067**

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Table 41 Data Network Equipment Counts

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Table 42 shows the average age of the network data assets by type.

Type of Network Data Asset	**Average Age of Asset**
Switch or Hub	4.1
Load Balancer	3.7
Other	3.5
Router	3.2
Firewall	3.0
Wireless	2.1
VPN	2.0
Overall Average	**3.6**

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Table 42 Average Age of Network Data Assets
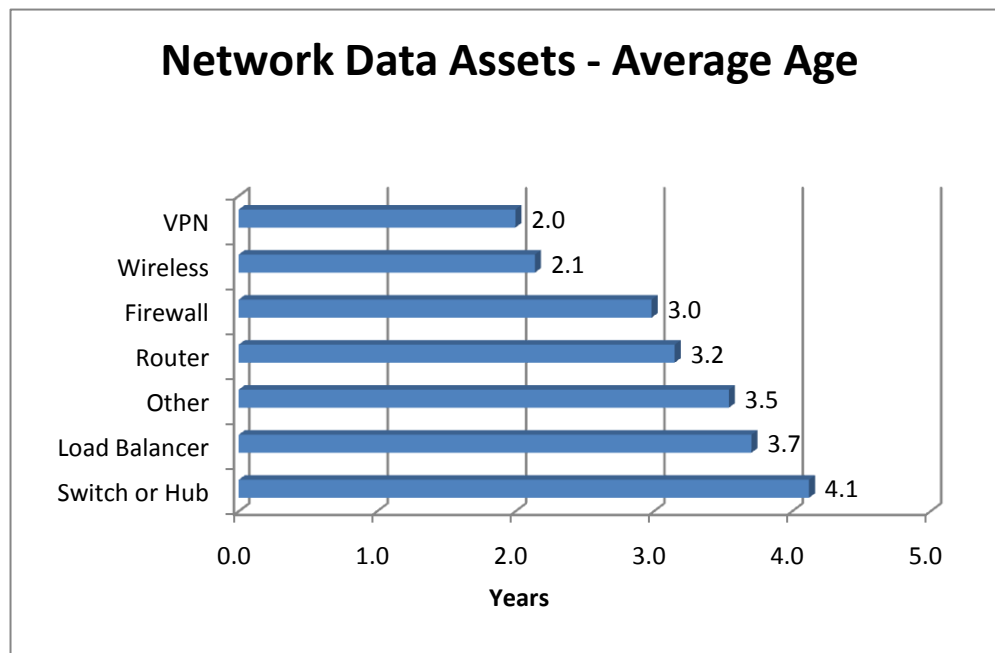
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Figure 23 Average Age of Network Data Assets

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Network Data Manufacturers

Table 43 shows the number of Network Data assets provided by the respective manufacturer. The top nine manufacturers account for 83% of the devices. There were over 110 unique manufacturers reported.

Network Data Equipment Manufacturer and Quantity of Devices	
Manufacturer	**Quantity**
Cisco	7,896
Avaya	1,870
Nortel	1,777
Dell	541
DIGITAL LINK	442
Adtran	293
APC	206
Allied Telesyn	154
Motorola	149
Sub Total	**13,328**
All other	**2,739**
Grand Total	**16,067**

Table 43 Network Data Equipment Manufacturers

Network Voice

Network Voice Equipment Counts

Table 44 shows the number of Network Voice assets by type reported by the participating agencies.

Voice Network Equipment	
Type of Equipment	**Quantity**
Call Manager	247
Key	8
Other	249
PBX	3
Switch	122
Grand Total	**629**

Table 44 Voice Network Equipment Types

Table 45 shows the average age of the network voice assets by type.

Type of Network Voice Asset	Average of Age of Asset
Switch	5.16
Key System	4.29
Call Manager	3.63
PBX	2.00
Overall Average	**3.92**

Table 45 Average Age of Network Voice Assets

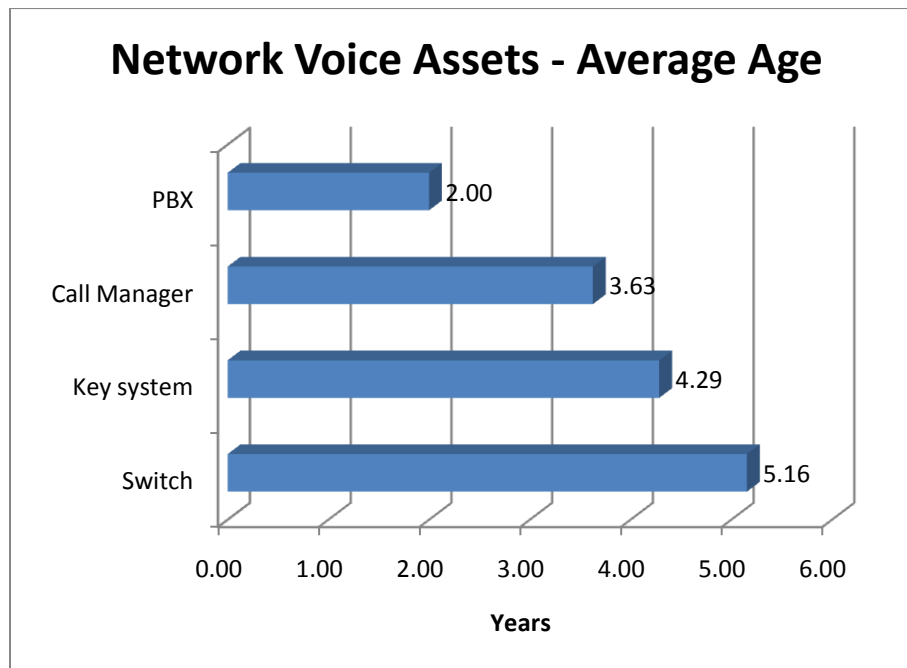**Network Voice Assets - Average Age**

Figure 24 Average Age of Network Voice Assets

Network Voice Trunks, Stations, Mailboxes

Table 46 shows the port counts, trunks, stations and mailboxes associated with Network Voice services.

All Supported Voice Trunks, Stations, Mailboxes							
Type of Equipment	Total Ports	Trunks Digital	Trunks Analog	Stations Digital	Stations Analog	Stations VOIP	Mailboxes
Call Manager	97,288	30,087	116	5,432	280	64,849	7,103
Switch	37,178	3,595	875	19,695	12,286	2,113	29,485
Grand Total	**134,466**	**33,682**	**991**	**25,127**	**12,566**	**66,962**	**36,588**

Table 46 All Supported Voice Trunks, Stations, Mailboxes

Service Desk

Table 47 shows the support personnel, number of authorized users, and the number of call answered by agency.

Service Desks			
	Support Personnel	**Authorized Users**	**Calls Answered**
ITS	45	377,800	18,407
DHHS	23	40,017	14,379
DOT	8	13,321	5,021
DENR	4	4,000	
ESC	7	3,500	17,000
DOR	4	1,600	2,348
DOC	2	36	5,000
Grand Total	**83**	**440,274**	**62,155**

Table 47 Agency Service Desk Personnel, Authorized Users, Calls Answered

E-mail

Table 48 shows the number of Email accounts by agency. There are 53,730 E-mail accounts reported as being supported.

E-mail Accounts	
Agency	**Number of Email Accounts**
DHHS	12,576
DOC	10,798
DOT	7,894
DENR	4,295
CCPS	3,200
External e-mail addresses	2,609
ESC	2,523
DJJDP	1,880
Other Accounts (Non-INSA, Local Gov)	1,880
DOR	1,700
DCR	1,133
ITS	935
WRC	670
COM	489
DOA	461
NCIC	165
Gov	145
COB	123
OSP	114

E-mail Accounts	
Agency	**Number of Email Accounts**
OSBM	77
ABC	45
LtGov	18
Grand Total	**53,730**

Table 48 Number of Email Accounts per Agency

Financial and Staffing

FTE Counts

Forty-two percent of staff is identified as in-scope for both FY10 and FY11.

FTEs-detail, by year							
* The FTE counts and dollar amounts include the Enterprise Summary plus ITS data.							
Agency		FY10			FY11		
	In-scope/Out of scope	In	Out	Total	In	Out	Total
Enterprise Roll-up	Direct-Employees	750.3	1,045.9	1,796.2	774.1	1,062.2	1,836.3
	Direct-Contractors/Temps	68.5	113.8	182.3	63.6	104.5	168.1
	Subtotal	818.8	1,159.7	1,978.5	837.7	1,166.7	2,004.3
	Shadow-Employees	144.2	152.3	296.5	140.0	150.7	290.7
	Shadow-Contractors/Temps	0.2	5.6	5.7	0.2	8.8	9.0
	Subtotal	144.3	157.9	302.2	140.2	159.6	299.7
Grand Total		**963.1**	**1,317.6**	**2,280.8**	**977.8**	**1,326.2**	**2,304.1**

Table 49 FTE Counts Summary

The 3 largest in-scope staff pools support End-User Computing, All Application Servers and Mainframe.

FTEs-by Tower, by Staffing and Staffing Related costs (employees & contractors)					
* The FTE counts and dollar amounts include the Enterprise Summary plus ITS data.					
Agency		FY10		FY11	
		#	$	#	$
Enterprise Roll-up	Mainframe	131.6	11,640,200.5	127.1	11,725,894.9
	Print Services	23.1	1,322,455.0	24.9	1,421,267.6
	Application Servers-Unix	75.6	6,679,358.8	77.0	6,953,875.1
	Application Servers-Wintel	109.4	9,800,588.3	113.6	10,381,183.4
	Application Servers-Other	9.1	712,940.4	9.7	793,726.6
	Utility Servers	29.2	2,639,966.7	31.5	2,910,405.6
	Network-LAN	53.9	4,722,395.0	54.4	4,823,089.6
	Network-WAN	87.0	8,218,967.6	83.9	8,175,565.4
	Network-Voice	91.1	7,616,919.3	95.6	8,104,403.0
	End User Computing	245.4	16,962,961.5	255.3	18,270,882.7
	Service/Help Desk	107.8	7,306,581.4	104.8	7,319,280.3
	Total Infrastructure	**963.1**	**$77,623,334**	**977.8**	**$80,879,574**
	Out of Scope	1,317.6	122,497,312.4	1,326.2	122,505,452.8
Grand Total		**2,280.8**	**$200,120,647**	**2,304.1**	**$203,385,027**

Table 50 FY10 and FY11 Staffing Levels and Related Costs

Financial Spend

Data for FY08 and FY09 was captured at the aggregate level. Out of Scope costs mostly represent FTE Staffing and Staffing related costs.

Total In-scope IT Spend - by year (in thousands)					
Agency		**FY08**	**FY09**	**FY10**	**FY11**
Enterprise Roll-up	**In-Scope**				
	Direct			$173,606.9	$179,819.5
	Shadow			$45,100.1	$43,859.1
	Subtotal			$218,707.0	$223,678.6
	Out of Scope				
	Direct			$113,066.9	$109,917.6
	Shadow			$13,955.6	$14,569.2
	Subtotal			$127,022.5	$124,486.8
	Combined				
	Direct	$255,575.6	$251,196.3	$286,673.8	$289,737.1
	Shadow	$37,720.9	$36,467.8	$59,055.7	$58,428.2
Grand Total		**$293,296.4**	**$287,664.2**	**$345,729.5**	**$348,165.3**

Table 51 FY08 – FY11 Direct and Shadow Costs

The breakdown of spend by tower for FY10 and FY11 is as follows.

Spend by Tower, by cost (in 000's)		FY10				FY11			
Agency		Direct	Shadow	Total	% of total Infra	Direct	Shadow	Total	% of total Infra
Enterprise Roll-up	Mainframe	$50,701.1	$15,251.9	$65,952.9	30.16%	$54,158.7	$15,362.5	$69,521.2	31.08%
	Print Services	$9,829.4	$230.3	$10,059.8	4.60%	$9,073.7	$282.7	$9,356.4	4.18%
	Application Servers-Unix	$3,230.9	$3,463.6	$6,694.5	3.06%	$4,326.0	$990.8	$5,316.8	2.38%
	Application Servers-Wintel	$11,355.2	$1,873.7	$13,228.9	6.05%	$11,264.5	$1,416.7	$12,681.2	5.67%
	Application Servers-Other	$6,675.9	$34.2	$6,710.1	3.07%	$6,491.6	$208.9	$6,700.5	3.00%
	Utility Servers	$4,937.6	$629.6	$5,567.2	2.55%	$5,931.3	$294.0	$6,225.3	2.78%
	Network-LAN	$10,076.7	$237.0	$10,313.7	4.72%	$11,408.8	$132.9	$11,541.7	5.16%
	Network-WAN	$18,187.9	$6,274.8	$24,462.6	11.19%	$18,560.4	$2,986.4	$21,546.8	9.63%
	Network-Voice	$19,582.9	$9,557.9	$29,140.8	13.32%	$21,179.7	$11,219.8	$32,399.5	14.48%
	End User Computing	$33,389.5	$7,316.1	$40,705.6	18.61%	$31,930.3	$10,733.3	$42,663.6	19.07%
	Service/ Help Desk	$5,639.8	$231.1	$5,870.9	2.68%	$5,494.5	$231.2	$5,725.7	2.56%
	Total Infrastructure	**$173,606.9**	**$45,100.1**	**$218,707.0**	**100.00%**	**$179,819.5**	**$43,859.1**	**$223,678.6**	**100.00%**
	Out of Scope	$113,066.9	$13,955.6	$127,022.5		$109,917.6	$14,569.2	$124,486.8	
Grand Total		**$286,673.8**	**$59,055.7**	**$345,729.5**		**$289,737.1**	**$58,428.2**	**$348,165.3**	

Table 52 FY10 and FY11 Spend by Tower

Total IT expenses by service tower for Financial Year 2010 are as follows:

Expense Category	Mainframe	Print Services	Application Servers - Unix	Application Servers - Wintel	Application Servers - Other	Utility Servers	Network - LAN	Network - WAN	Network - Voice	End User Computing	Service/ Help Desk	Total Infrastructures Costs	Out of Scope	Total Costs
Agency Total IT Expenses	FY10	FY10	FY10	FY10	FY10	FY10	FY10	FY10	FY10	FY10	FY10	FY10	FY10	FY10
FTE: Employees	30.78	21.92	22.68	47.04	8.93	20.73	37.05	14.18	16.65	154.76	61.85	436.57	1,060.70	1,497.27
FTE: Contractors (Onsite & Offsite) & Tem	1.04	0.72	1.34	3.86	0.10	0.94	5.70	1.43	0.05	45.95	7.52	68.63	119.42	188.05
FTE Total	31.82	22.64	24.01	50.90	9.03	21.67	42.75	15.60	16.70	200.71	69.36	505.20	1,180.12	1,685.32
Total Salary & Related Costs	$2,544,081	$1,254,598	$2,176,942	$4,115,942	$700,019	$1,811,035	$3,207,013	$1,250,043	$1,268,587	$10,786,711	$4,054,082	$33,169,052	$94,396,729	$127,565,781
Contractors & Temps Costs	$136,810	$26,686	$225,388	$241,436	$5,421	$64,984	$517,946	$139,590	$2,710	$2,681,092	$388,836	$4,430,900	$17,321,927	$21,752,827
Contract & 3rd Party Services	$38,507,017	$140,155	$406,190	$393,587	$959,483	$388,265	$893,833	$4,265,890	$7,098,243	$11,491,478	$588,690	$65,132,833	$9,969,572	$75,102,405
Training / Conferences / Travel	$28,980	$5,408	$872	$44,735	$872	$872	$12,980	$0	$872	$12,139	$0	$107,728	$0	$107,728
Facilities - Rent (floor space)	$15,177	$24,228	$24,900	$78,036	$9,712	$23,063	$71,984	$9,084	$7,848	$214,282	$205,273	$683,586	$0	$683,586
Facilities - Depreciation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Facilities - Utilities/Maintenance	$95,104	$124,311	$20,902	$205,611	$13,842	$46,777	$217,505	$8,225	$861,121	$875,095	$99,781	$2,568,273	$984,336	$3,552,609
Hardware - Depreciation	$172,361	$86,782	$3,106,819	$1,587,169	$4,458	$300,375	$380,875	$216,371	$78,163	$6,816,092	$129,274	$12,878,738	$31,846	$12,910,584
Hardware - Purchases	$0	$0	$0	$379,561	$8,964	$0	$769,526	$0	$0	$279,930	$0	$1,437,981	$0	$1,437,981
Hardware - Expensed (non-capital)	$3,455	$1,608	$0	$10,586	$0	$4,138	$756,848	$0	$757	$321,871	$2,591	$1,101,855	$5,381	$1,107,236
Hardware – Leases	$0	$19,616	$9,192	$10,836	$0	$3,876	$0	$338,678	$154,447	$7,373	$0	$544,018	$0	$544,018
Hardware - Maintenance	$59,524	$396,157	$72,013	$345,555	$276,627	$35,713	$1,524,880	$38,546	$8,082	$290,817	$40,709	$3,088,623	$36,139	$3,124,762
Application Software - Maintenance	$3,976	$188	$71,826	$337,085	$215,717	$68,468	$653,397	$789,636	$199	$2,118,275	$6,524	$4,265,291	$3,410	$4,268,701
Application Software - Amortization	$68,631	$7,072	$109,914	$247,098	$496,248	$338,143	$30,884	$0	$3,430	$1,015,244	$51,695	$2,368,359	$13,928	$2,382,287
Application Software - Expensed	$0	$0	$0	$7,632	$0	$0	$1,875	$0	$0	$264,163	$0	$273,670	$0	$273,670
System Software - Maintenance	$158,080	$2,877	$276,986	$2,779,476	$162,768	$555,149	$201,162	$132,937	$58,402	$855,808	$37,962	$5,221,608	$3,005,255	$8,226,863
System Software - Amortization	$73,474	$7,347	$60,432	$364,150	$422,532	$137,102	$33,064	$0	$3,673	$219,976	$58,499	$1,380,248	$7,869	$1,388,117
System Software - Expensed	$0	$0	$6,180	$63,204	$0	$0	$16,949	$0	$0	$17,129	$0	$103,462	$0	$103,462
Debt Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Disaster Recovery Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Network - Transport & Carrier	$24,025,344	$5,338	$114,066	$1,953,098	$3,418,037	$1,762,716	$994,908	$16,969,299	$19,557,504	$447,621	$112,688	$69,360,619	$1,167,349	$70,527,968
Admin/Supplies	$28,439	$658,238	$256	$28,623	$75	$11,834	$8,327	$0	$25,467	$1,175,045	$68,630	$2,004,934	$37,133	$2,042,067
Other	$24,560	$7,271,463	$7,632	$27,607	$11,359	$10,697	$14,058	$300,377	$7,356	$492,409	$17,765	$8,185,282	$41,636	$8,226,918
Overheads	$7,915	$27,702	$3,957	$7,915	$3,957	$3,957	$3,957	$3,957	$3,957	$19,787	$7,915	$94,978	$0	$94,978
Other: Description Here	$0	$0	$0	$0	$0	$0	$1,729	$0	$0	$303,231	$0	$304,960	$0	$304,960
Other: Description Here	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other: Description Here	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total IT Expense $	$65,952,928	$10,059,774	$6,694,466	$13,228,942	$6,710,089	$5,567,164	$10,313,699	$24,462,634	$29,140,819	$40,705,570	$5,870,916	$218,707,001	$127,022,510	$345,729,511

Table 53 FY10 Expenses by Service Tower

Total IT expenses by service tower for Financial Year 2011 are as follows:

Expense Category	Mainframe	Print Services	Application Servers - Unix	Application Servers - Vintel	Application Servers - Other	Utility Servers	Network - LAN	Network - WAN	Network - Voice	End User Computing	Service/ Help Desk	Total Infrastructures Costs	Out of Scope	Total Costs
Agency Total IT Expenses	FY11	FY11	FY11	FY11	FY11	FY11	FY11	FY11	FY11	FY11	FY11	FY11	FY11	FY11
FTE: Employees	30.35	23.83	23.52	48.25	9.43	21.04	39.43	15.57	22.29	156.44	64.30	454.45	1,043.03	1,497.48
FTE: Contractors (Onsite & Offsite) & Tem	0.52	0.65	0.66	2.66	0.26	1.88	4.24	0.52	0.03	43.20	6.48	61.10	110.36	171.46
FTE Total	30.87	24.48	24.19	50.91	9.69	22.92	43.68	16.09	22.33	199.63	70.77	515.55	1,153.39	1,668.94
Total Salary & Related Costs	$2,580,839	$1,356,021	$2,279,068	$4,207,172	$755,459	$1,845,866	$3,336,171	$1,307,800	$1,616,456	$11,025,855	$4,262,247	$34,572,955	$95,046,298	$129,619,254
Contractors & Temps Costs	$82,729	$24,315	$92,195	$168,209	$31,025	$122,202	$387,450	$41,498	$3,051	$2,697,900	$334,246	$3,984,821	$14,886,396	$18,871,217
Contract & 3rd Party Services	$40,060,941	$397,498	$1,040,295	$434,309	$753,383	$1,838,735	$615,882	$3,297,447	$8,241,714	$8,020,638	$511,905	$65,212,747	$10,853,054	$76,065,801
Training / Conferences / Travel	$0	$3,927	$0	$6,147	$501	$593	$11,110	$501	$501	$11,615	$0	$34,896	$0	$34,896
Facilities - Rent (floor space)	$17,954	$17,048	$25,830	$68,466	$3,063	$17,132	$52,102	$2,999	$3,824	$147,176	$170,009	$525,602	$51,712	$577,314
Facilities - Depreciation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Facilities - Utilities/Maintenance	$59,016	$119,655	$11,124	$122,754	$12,367	$30,969	$246,776	$7,519	$810,146	$1,049,526	$65,511	$2,535,362	$403,098	$2,938,460
Hardware - Depreciation	$153,160	$63,861	$97,873	$731,952	$121,982	$158,265	$908,401	$31,930	$56,158	$8,429,608	$114,875	$10,868,064	$526,042	$11,394,106
Hardware - Purchases	$0	$0	$0	$764,932	$42,972	$0	$668,328	$0	$0	$1,092,174	$0	$2,568,406	$0	$2,568,406
Hardware - Expensed (non-capital)	$2,498	$28,863	$374	$10,010	$0	$3,001	$811,228	$0	$1,123	$208,120	$1,874	$1,067,091	$8,755	$1,075,846
Hardware – Leases	$0	$17,389	$9,192	$162,804	$0	$3,876	$0	$155,883	$119,536	$2,567	$0	$471,247	$0	$471,247
Hardware - Maintenance	$78,170	$354,488	$248,744	$1,154,337	$280,815	$38,147	$1,586,089	$0	$8,816	$323,273	$58,631	$4,131,511	$293,889	$4,425,400
Application Software - Maintenance	$8,266	$203	$84,310	$212,692	$305,313	$54,595	$1,484,784	$0	$98	$3,062,397	$3,031	$5,215,689	$8,661	$5,224,350
Application Software - Amortization	$2,148	$213	$23,542	$48,496	$462,792	$1,315	$968	$0	$109	$1,142,631	$1,659	$1,683,874	$8,729	$1,692,603
Application Software - Expensed	$0	$0	$0	$0	$0	$0	$1,875	$0	$0	$94,447	$0	$96,322	$0	$96,322
System Software - Maintenance	$134,466	$8,659	$846,186	$2,675,185	$304,921	$596,676	$66,392	$0	$102	$2,949,726	$21,522	$7,603,836	$1,793,968	$9,397,804
System Software - Amortization	$10,261	$1,025	$1,538	$74,502	$301,197	$9,748	$4,615	$1,219,489	$513	$32,163	$8,262	$1,663,313	$44,937	$1,708,250
System Software - Expensed	$495,000	$0	$0	$732,451	$0	$0	($20,053)	$0	$0	$8,325	$0	$1,215,723	$0	$1,215,723
Debt Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Disaster Recovery Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Network - Transport & Carrier	$25,779,653	$6,049	$542,823	$1,060,856	$3,314,764	$1,475,989	$1,357,104	$15,101,029	$21,501,795	$1,144,200	$137,868	$71,422,128	$463,131	$71,885,259
Admin/Supplies	$22,752	$548,624	$1,527	$12,220	$0	$12,069	$5,084	$0	$24,904	$614,262	$8,453	$1,249,894	$37,458	$1,287,352
Other	$25,398	$6,380,818	$8,243	$25,613	$5,967	$12,170	$12,960	$376,778	$6,671	$587,221	$17,688	$7,459,527	$60,638	$7,520,165
Overheads	$7,915	$27,702	$3,957	$7,915	$3,957	$3,957	$3,957	$3,957	$3,957	$19,787	$7,915	$94,978	$0	$94,978
Other: Description Here	$0	$0	$0	$152	$0	$0	$432	$0	$0	$0	$0	$584	$0	$584
Other: Description Here	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other: Description Here	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total IT Expense $	$69,521,166	$9,356,358	$5,316,821	$12,681,175	$6,700,477	$6,225,306	$11,541,657	$21,546,831	$32,399,475	$42,663,609	$5,725,695	$223,678,571	$124,486,767	$348,165,338

Table 54 FY11 Expenses by Service Tower

Operational and Data Center Assessment Summary

Approach

To determine the level of operational maturity of the in-scope Agencies across the State of North Carolina, TPI conducted over 60 separate business, technical or joint business and technical staff interviews with each executive branch agency within the scope of the INSA Assessment.

These interviews explored with the Agency representatives the current state of IT infrastructure performance within their respective Agency and focused on the following operational domains:

➤ Customer

➤ Management

➤ Organizational

➤ Operational

The subject of Agency IT governance was also covered during the interviews, and was included for reference and context purposes only (no assessment rating was assigned).

Within these four domains of IT Performance, TPI Agency interviews explored the following areas:

➤ Current and future requirements, including in-flight and upcoming projects;

➤ Customer satisfaction and Agency's perceptions of service/support;

➤ IT Strategy and alignment to Business Planning;

➤ Funding;

➤ Risk Management;

➤ Technical Currency and Refresh Strategies;

➤ Delivery Management Process;

➤ Disaster Recovery Capabilities and Testing;

➤ Policies and Procedures;

➤ Workforce Planning & Staffing/Turnover/Retention;

➤ Service Metrics/Service Level Agreements

The information obtained from interviews was organized, reviewed, and analyzed. Observations, Agency statements and other information formed the basis of the data subsequently used to populate the TPI Operational Assessment Tool.

TPI formulated Agency ratings based on interview findings, site visit observations, qualitative data, volumetric and service data. Subsequently TPI developed recommendations with regard to the current state of IT infrastructure operations.

A three (3) rating on the assessment's five point scale (1-Low / 5-High) indicates general attainment of operational maturity with a rating of 3.5 and above indicating evidence exists of sustained and improving operational maturity.

Rating should not be viewed as representing a comprehensive "audit" of the IT operational environment, but rather a vehicle to understand current maturity and identify areas for potential improvement.

The scope of the Operational Assessment included the Participating Agencies as shown in Table 55 following:

Participating Agencies			
Non-Consolidated Agencies		**Consolidated Agencies**	
Information Technology Services - ITS (includes SCIO Office)			
Crime Control and Public Safety	CCPS	Alcoholic Beverage Control Commission	ABC
Department of Environmental and Natural Resources[3]	DENR	Commissioner of Banks	COB
Department of Health and Human Services	DHHS	Department of Administration	DOA
Department of Correction	DOC	Department of Commerce	COM
Department of Revenue	DOR	Department of Cultural Resources	DCR
Department of Transportation	DOT	Department o f Juvenile Justice and Delinquency Prevention	DJJDP
Employment Security Commission	ESC	NC Industrial Commission	NCIC
NC Wildlife Resource Commission	WRC	Office of State Budget and Management	OSBM
		Office of State Personnel	OSP
		Office of the Governor	GOV
		Office of the Lt. Governor	LTGOV

Table 55 Participating Agencies

The majority of the Operational Assessment was focused on non-consolidated Agencies. In general, the ITS assessments included consolidated Agencies but in certain circumstances it was appropriate to assess certain consolidated Agency functions.

The primary drivers behind the compiled filter score are in the areas of:

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[3] DENR IT infrastructure services are in the process of being consolidated into ITS.

Service Level implementation

Formal Customer Satisfaction survey implementation

Business understanding of the cost of IT services

Ability to adequately maintain appropriate staffing levels and requisite skill sets

Recommendations were developed based on observations, information gathered and experience with other public and private sector organizations.

__The Operational Assessments are an evaluation of current state operations and therefore the recommendations are in the context of improvements to existing operations and practices.__

Assessment and Observations

The following show the results of the Operational Assessments for the respective State of North Carolina Agencies:

Agency	Score
Summary	2.94
Alcoholic and Beverage Control Commission (ABC)	2.74
Crime Control and Public Safety (CCPS)	3.06
Commissioner of Banks (COB)	2.88
Department of Commerce (COM)	3.04
North Carolina Department of Cultural Resources (NCDCR)	2.86
Department of Environment and Natural Resources (DENR)	3.18
Department of Health and Human Services (DHHS)	3.27
Department of Juvenile Justice and Delinquency Prevention (DJJDP)	2.73
Department of Administration (DOA)	2.64

Agency	Score
Department of Correction (DOC)	3.35
Department of Revenue (DOR)	3.55
Department of Transportation (DOT)	3.04
Employment Security Commission (ESC)	3.19
Office of the Governor (GOV)	2.80
Information Technology Services (ITS) Composite	3.40
Office of the Lt. Governor (LTGOV)	2.99
North Carolina Industrial Commission (NCIC)	2.76
Office of State Budget Management (OSBM)	2.61
Office of State Personnel (OSP)	2.91
Wildlife Resource Commission (WRC)	3.08

Table 56 Operational Assessment Results by Participating Agency

The Overall Operational Assessment Summary for all Participating Agencies is a follows:
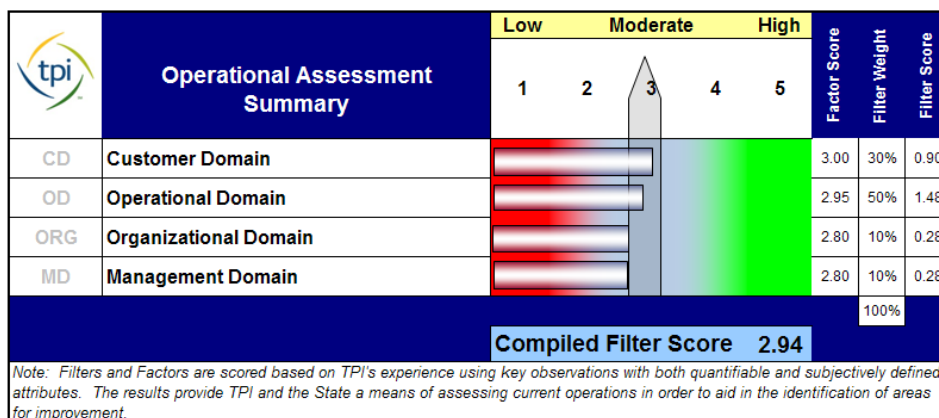
Figure 25 Operational Assessment Summary by Domain

Recommendations

In order to advance the level of maturity in operational processes and procedures necessary to delivery world class services, TPI recommends actions and processes for Consolidated, Non-Consolidated Agencies, and ITS specifically (as the centralized IT organization for the State).

Consolidated and Non-Consolidated Agencies

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

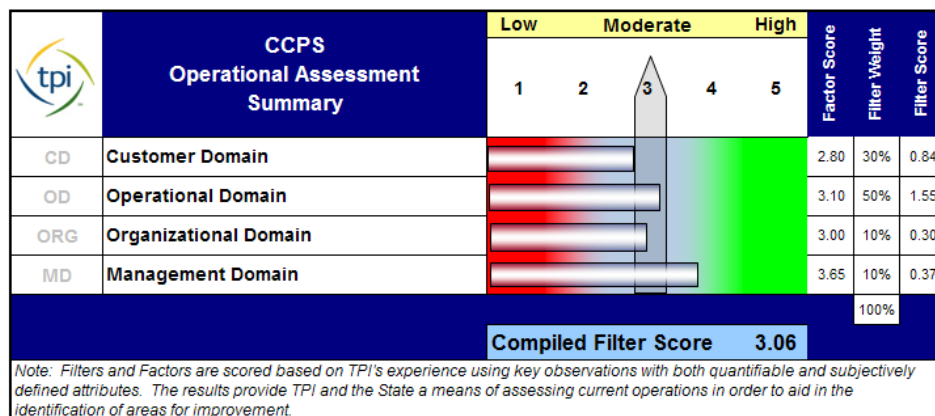➢ Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Engage ITS to ensure Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) are clear and join Disaster Recovery testing is performed.

➢ Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.

Non-Consolidated Agencies

➢ Consider development of an Agency IT Service Catalog for use by Customer with initial set of regularly requested services/support activities defined and performance characteristics outlined.

- Develop formal corrective action plans to address Agency IT issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

- Address organizational needs for attracting and retaining of IT personnel for Agency. Increase training opportunities and reduce number of contractors required in the future.

- Ensure an IT Strategic Plan is in place that is in alignment with Business Planning.

- Develop an Agency IT service methodology and guidelines for New Service definition and adoption.

ITS Specific

- Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

- Ensure formal corrective action plans are created to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

- Ensure the ITS BRMs regularly meeting with Agencies to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

- Develop IT Network Voice Roadmap and Strategic Plan to address new technology approaches that are in alignment with business plans of Agencies/Customers.

- Engage Agencies to incorporate 'small agency' perspective and reduce the perception of the ITS solution as providing a "one-size fits all".

The Operational Assessment results for each agency are as follows:

Alcoholic and Beverage Control Commission (ABC)
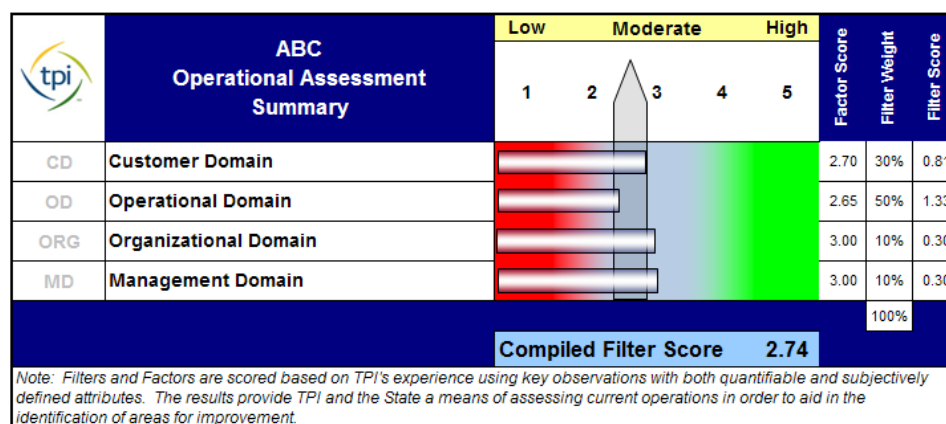
Figure 26 Operational Assessment Summary – ABC

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.
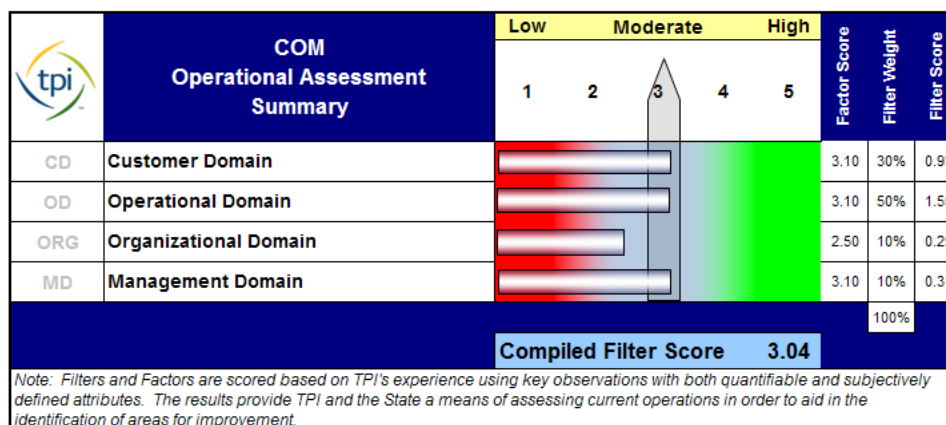
➢

➢ Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Engage ITS to ensure Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) are clear and join Disaster Recovery testing is performed.

➢ Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.
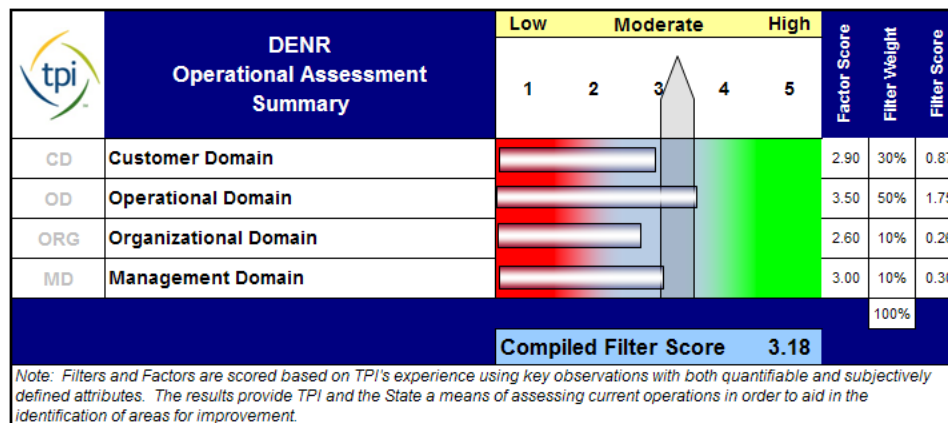
Crime Control and Public Safety (CCPS)

CCPS Operational Assessment Summary	Factor Score	Filter Weight	Filter Score
CD Customer Domain	2.80	30%	0.84
OD Operational Domain	3.10	50%	1.55
ORG Organizational Domain	3.00	10%	0.30
MD Management Domain	3.65	10%	0.37
		100%	
Compiled Filter Score			3.06

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.

Figure 27 Operational Assessment Summary – CPPS

Recommendations

➢ Define Service Levels and implement regular monitoring and reporting to enable identification of areas for improvement.

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Develop Service Catalog beginning with most asked, repeatable requests.

➢ Secure budget for additional staffing to reduce workload/support coverage from current staff.

Commissioner of Banks (COB)
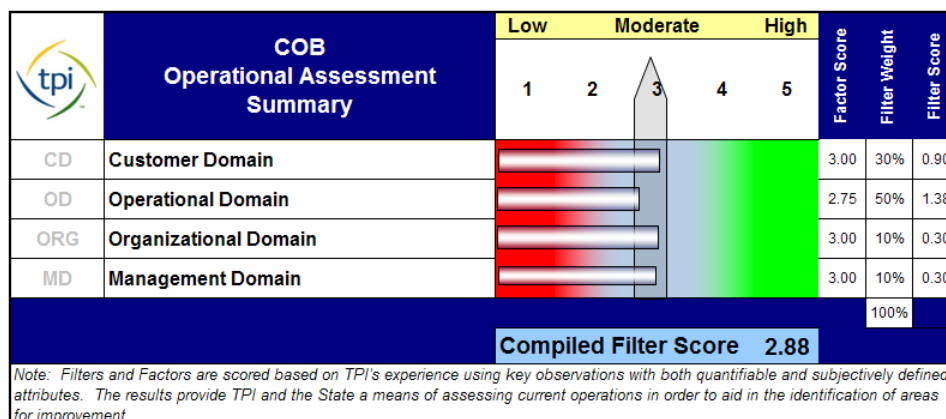
Figure 28 Operational Assessment Summary – COB

Recommendations

➤ Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➤ Engage ITS to ensure Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) are clear and join Disaster Recovery testing is performed.

➤ Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

➤ Participate with ITS when service solution development begins.
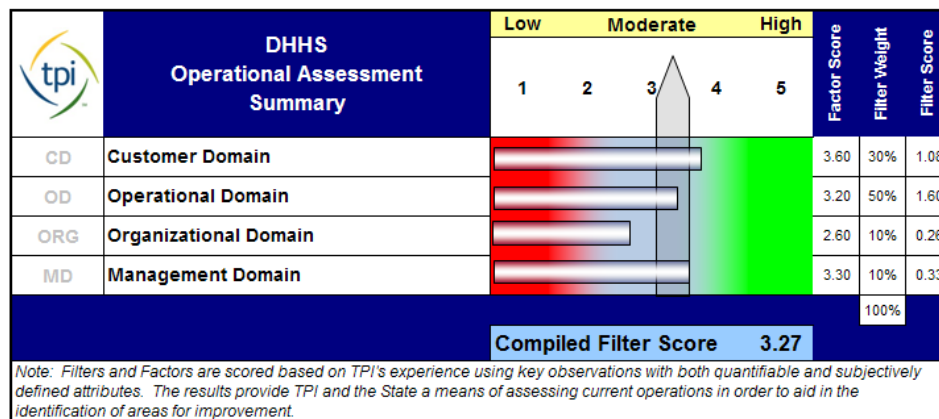
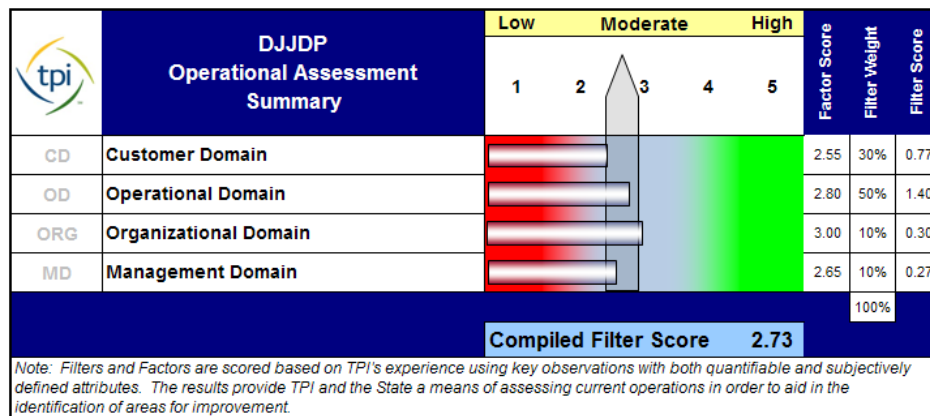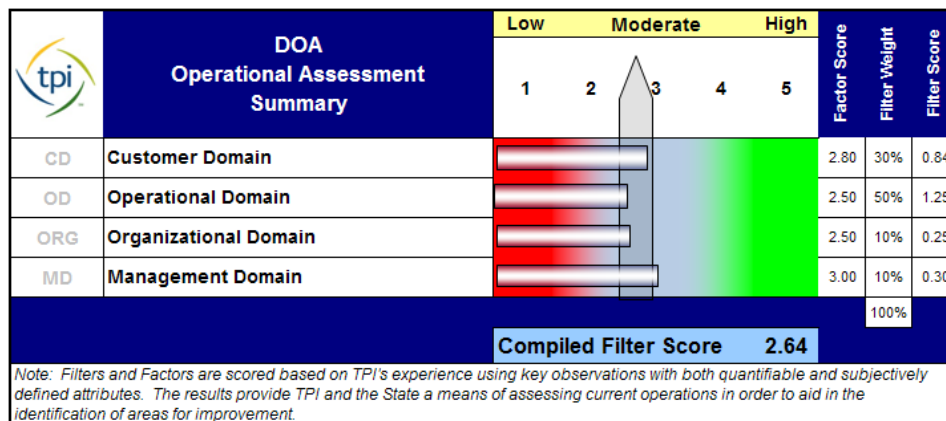## Department of Commerce (COM)

Figure 29 Operational Assessment Summary – COM

Recommendations

➤ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

- Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.
- Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.
- Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

North Carolina Department of Cultural Resources (NCDCR)

DCR Operational Assessment Summary		Factor Score	Filter Weight	Filter Score
CD	Customer Domain	2.55	30%	0.765
OD	Operational Domain	2.95	50%	1.475
ORG	Organizational Domain	3.00	10%	0.300
MD	Management Domain	3.20	10%	0.320
			100%	
	Compiled Filter Score	2.86		

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.

Figure 30 Operational Assessment Summary – DCR

Recommendations
- Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.
- Engage ITS to ensure Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) are clear and join Disaster Recovery testing is performed.

Department of Environment and Natural Resources (DENR)

DENR Operational Assessment Summary	Low	Moderate	High	Factor Score	Filter Weight	Filter Score
	1	2 3	4 5			
CD Customer Domain				2.90	30%	0.87
OD Operational Domain				3.50	50%	1.75
ORG Organizational Domain				2.60	10%	0.26
MD Management Domain				3.00	10%	0.30
					100%	
		Compiled Filter Score		3.18		

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.
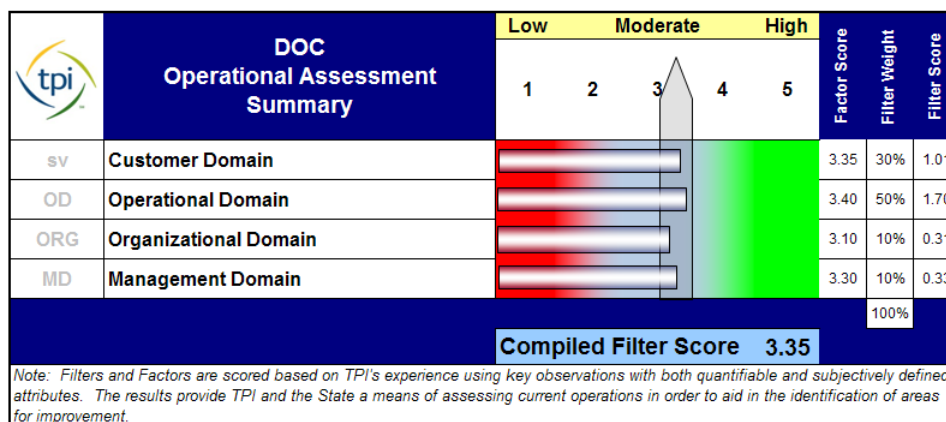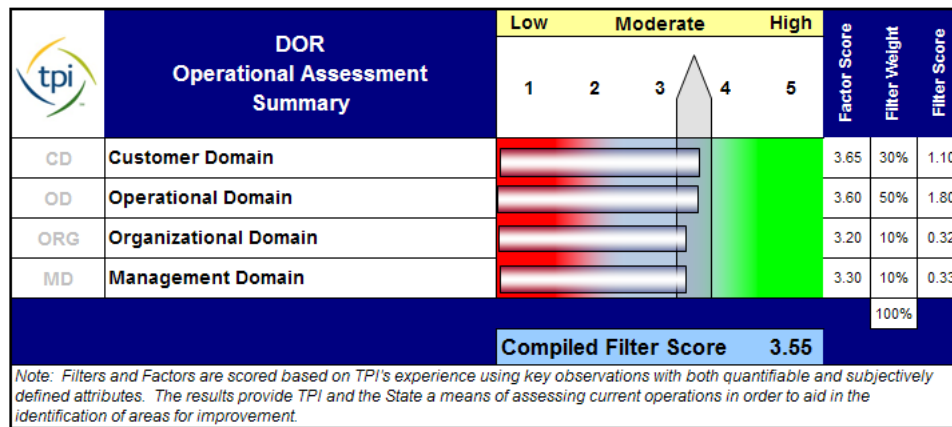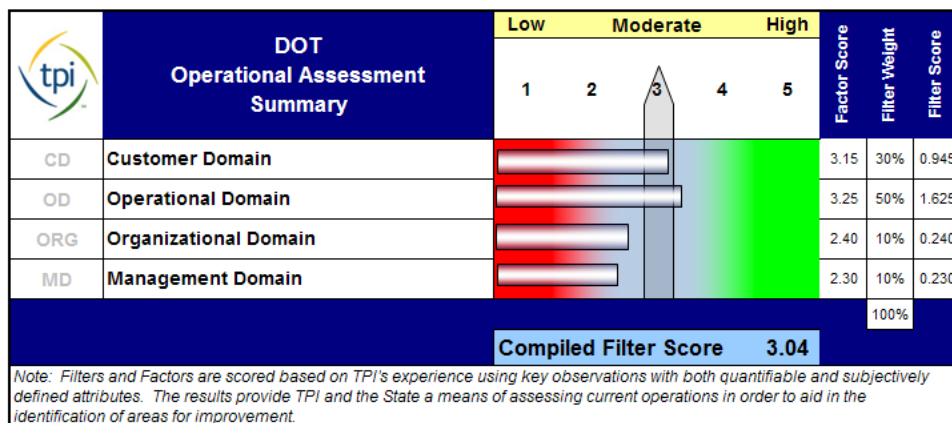
Figure 31 Operational Assessment Summary – DENR

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Put forth additional business case rationale for recruitment of skilled IT staffing to meet technical needs of Agency (reducing training requirements and long growth curve of non-IT background personnel).

➢ Participate with ITS when service solution development begins.

Department of Health and Human Services (DHHS)

DHHS Operational Assessment Summary	Low	Moderate	High	Factor Score	Filter Weight	Filter Score
	1	2 3	4 5			
CD Customer Domain				3.60	30%	1.08
OD Operational Domain				3.20	50%	1.60
ORG Organizational Domain				2.60	10%	0.26
MD Management Domain				3.30	10%	0.33
					100%	
		Compiled Filter Score		3.27		

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.

Figure 32 Operational Assessment Summary – DHHS

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

- Develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.
- Address organizational needs for attracting and retaining of IT personnel for Agency. Increase training opportunities and reduce number of contractors required in the future.
- Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.

Department of Juvenile Justice and Delinquency Prevention (DJJDP)

	DJJDP Operational Assessment Summary	Low 1	Moderate 3	High 5	Factor Score	Filter Weight	Filter Score
CD	Customer Domain				2.55	30%	0.77
OD	Operational Domain				2.80	50%	1.40
ORG	Organizational Domain				3.00	10%	0.30
MD	Management Domain				2.65	10%	0.27
						100%	
			Compiled Filter Score	2.73			

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.
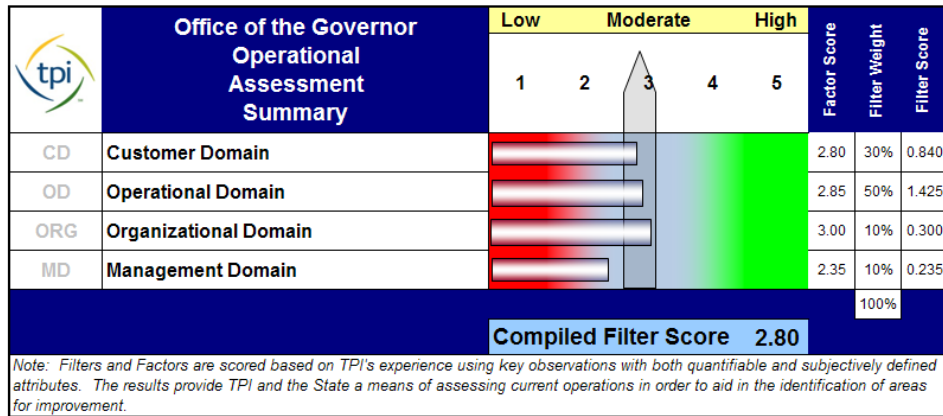
Figure 33 Operational Assessment Summary – DJJDP

Recommendations
- Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.
- Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.
- Engage ITS to ensure Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) are clear and join Disaster Recovery testing is performed.
- Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.
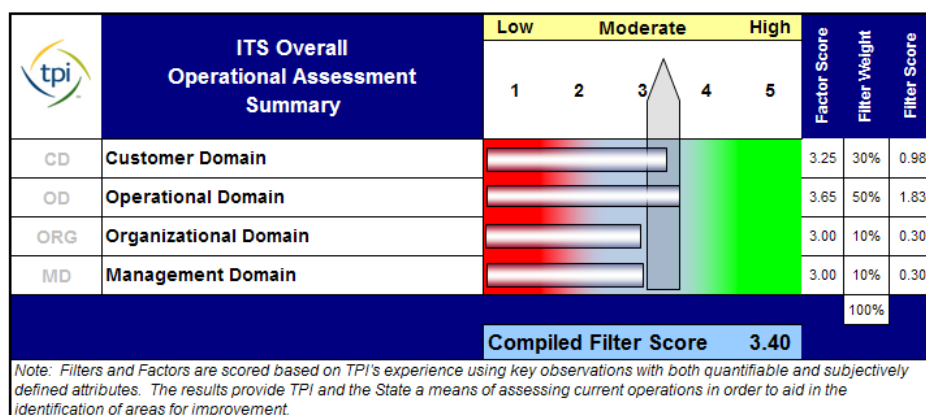
Department of Administration (DOA)

Figure 34 Operational Assessment Summary – DOA

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Engage ITS to ensure Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) are clear and join Disaster Recovery testing is performed.

➢ Address organizational needs for attracting and retaining of IT personnel for the Agency. Increase training opportunities and reduce number of contractors required in the future.

➢ Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.
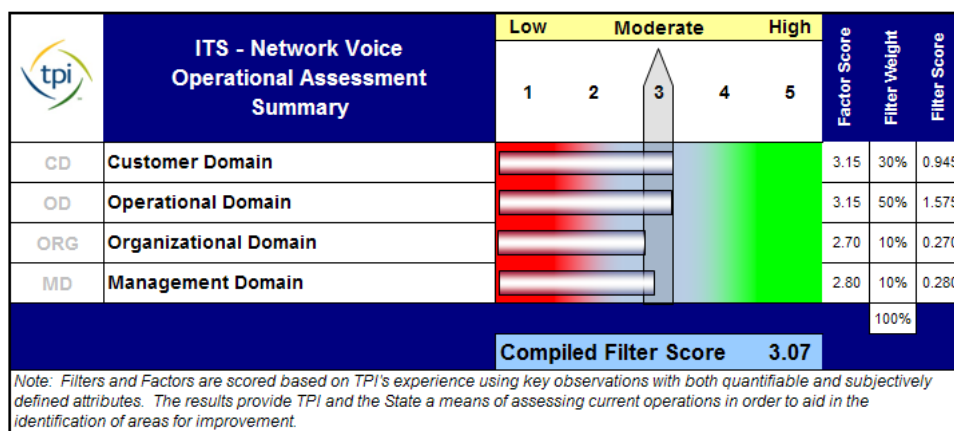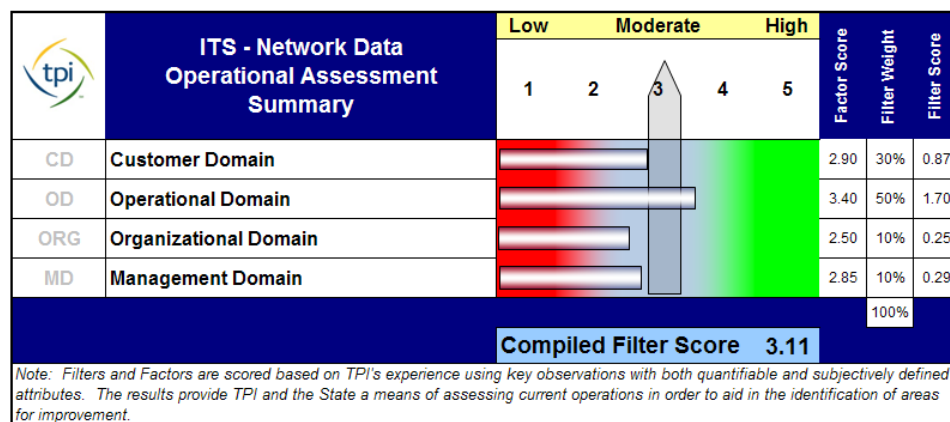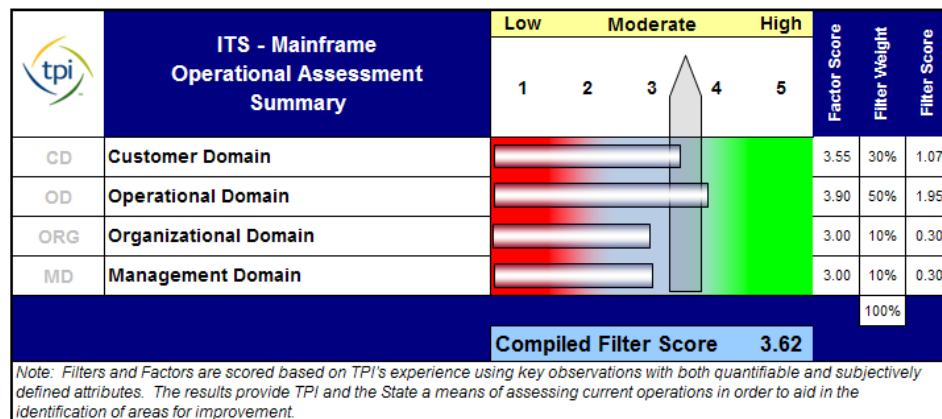
Department of Correction (DOC)

Figure 35 Operational Assessment Summary – DOC

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.
➢ Develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.
➢ Consider development of Service Catalog for use by Customer with initial set of regularly requested services/support activities defined and performance characteristics outlined.
➢ Address organizational needs for attracting IT staff with specific skill sets needed for Agency.
➢ Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.

Department of Revenue (DOR)

DOR Operational Assessment Summary		Factor Score	Filter Weight	Filter Score
CD	Customer Domain	3.65	30%	1.10
OD	Operational Domain	3.60	50%	1.80
ORG	Organizational Domain	3.20	10%	0.32
MD	Management Domain	3.30	10%	0.33
			100%	
	Compiled Filter Score	3.55		

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.

Figure 36 Operational Assessment Summary – DOR

Recommendations
➢ Consider development of Service Catalog for use by Customer with initial set of regularly requested services/support activities defined and performance characteristics outlined.
➢ Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.

Department of Transportation (DOT)

Figure 37 Operational Assessment Summary – DOT

Recommendations

- ➢ Consider development of Service Catalog for use by Customer with initial set of regularly requested services/support activities defined and performance characteristics outlined.
- ➢ Develop an IT Strategic Plan that is in alignment with Business Planning.
- ➢ Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.
- ➢ Develop methodology and guidelines for New Service definition and adoption.

Employment Security Commission (ESC)
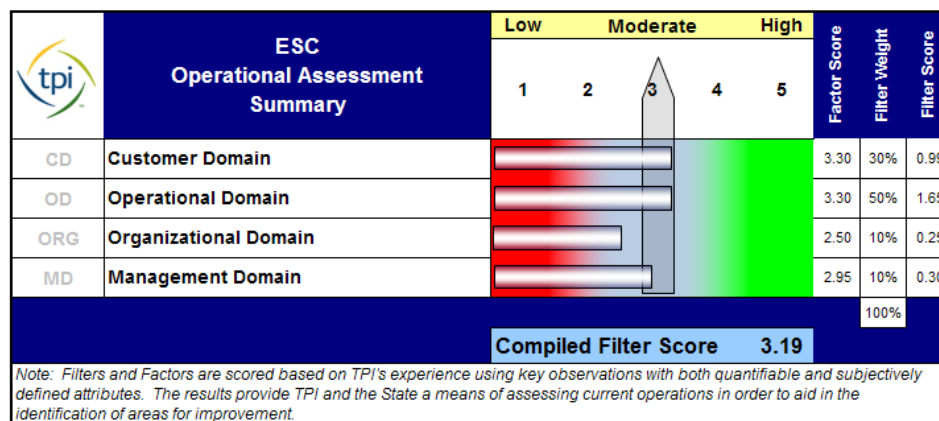
Figure 38 Operational Assessment Summary – ESC

Recommendations

- ➢ Consider development of Service Catalog for use by Customer with initial set of regularly requested services/support activities defined and performance characteristics outlined.
- ➢ Address organizational needs for attracting and retaining of IT personnel for the Agency.
- ➢ Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.

> Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

Office of the Governor (GOV)

	Office of the Governor Operational Assessment Summary	Low		Moderate		High	Factor Score	Filter Weight	Filter Score
		1	2	3	4	5			
CD	Customer Domain						2.80	30%	0.840
OD	Operational Domain						2.85	50%	1.425
ORG	Organizational Domain						3.00	10%	0.300
MD	Management Domain						2.35	10%	0.235
								100%	
		Compiled Filter Score		2.80					

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.
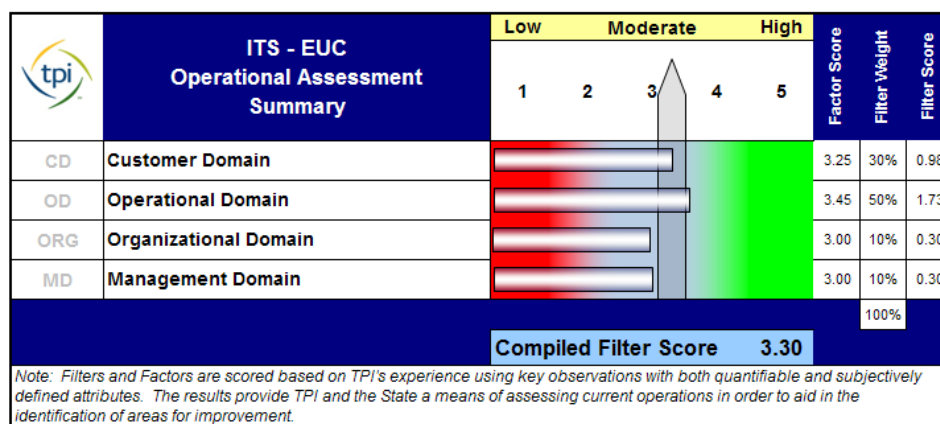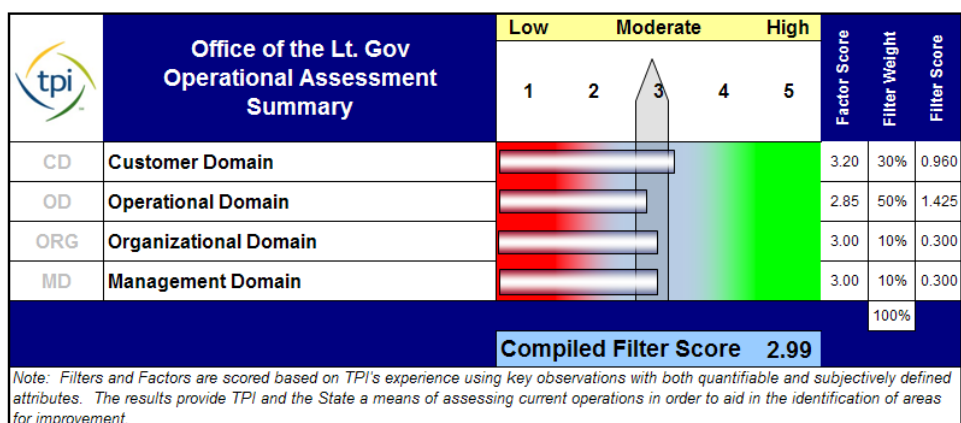
Figure 39 Operational Assessment Summary – GOV

Recommendations
> Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.
> Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.
> Develop an IT Strategic Plan that is in alignment with Business Planning.
> Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.
> Engage ITS to ensure Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) are clear and join Disaster Recovery testing is performed.

Information Technology Services (ITS)

Figure 40 Operational Assessment Summary – ITS

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Ensure the ITS BRMs regularly meeting with Agencies to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

Information Technology Services (ITS) – Network Voice

Figure 41 Operational Assessment Summary – ITS Network Voice

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

- Develop IT Network Voice Roadmap and Strategic Plan to address new technology approaches that are in alignment with business plans of Agencies/Customers.
- Ensure the ITS BRMs regularly meeting with Agencies to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

Information Technology Services (ITS) – Network Data

	ITS - Network Data Operational Assessment Summary	Low 1	2	Moderate 3	4	High 5	Factor Score	Filter Weight	Filter Score
CD	Customer Domain						2.90	30%	0.87
OD	Operational Domain						3.40	50%	1.70
ORG	Organizational Domain						2.50	10%	0.25
MD	Management Domain						2.85	10%	0.29
								100%	
		Compiled Filter Score		3.11					

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.
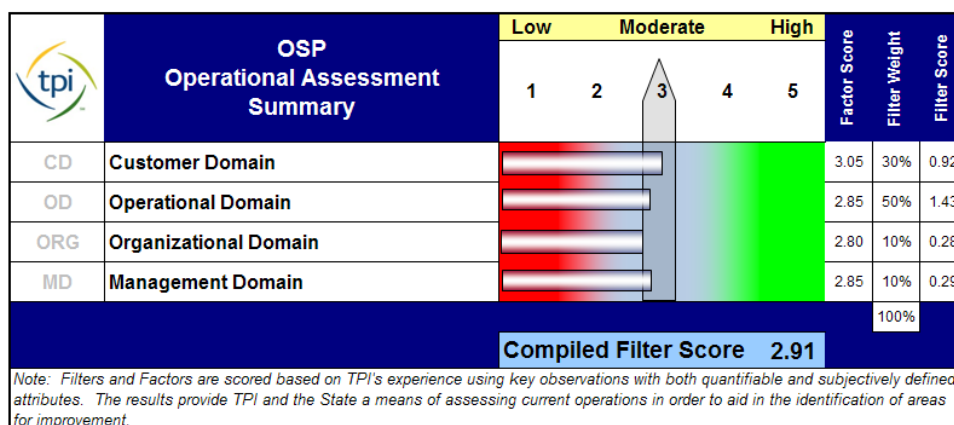
Figure 42 Operational Assessment Summary – ITS Network Data

Recommendations

- Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.
- Develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.
- Develop IT Network Data Roadmap and Strategic Plan to address new technology approaches that are in alignment with business plans of Agencies/Customers.
- Ensure the ITS BRMs regularly meeting with Agencies to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.
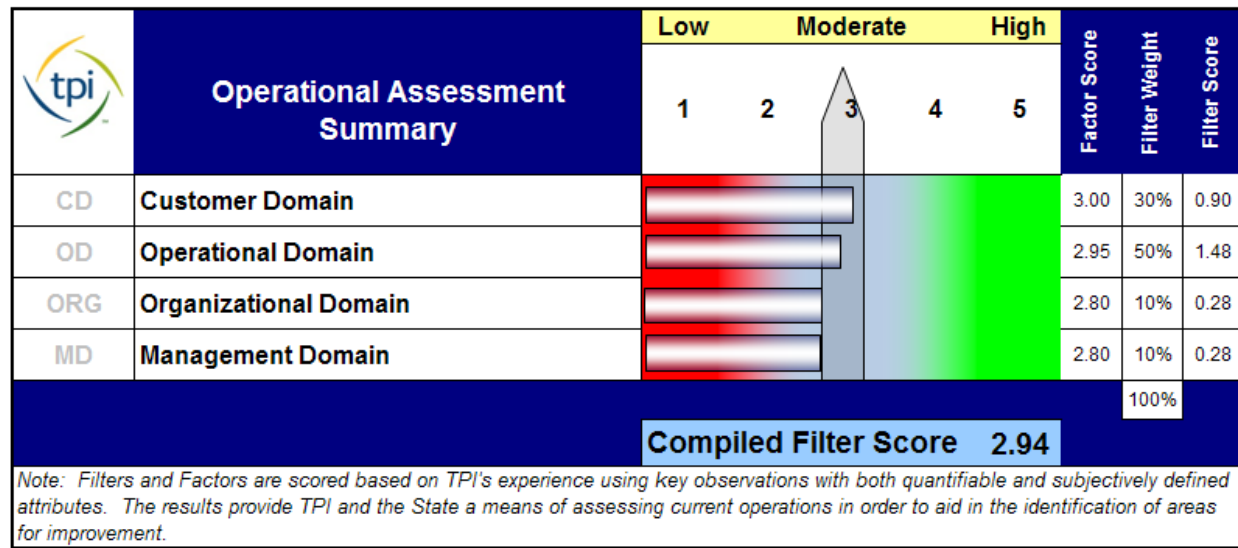
Information Technology Services (ITS) – Mainframe

	ITS - Mainframe Operational Assessment Summary	Low Moderate High / 1 2 3 4 5	Factor Score	Filter Weight	Filter Score
CD	Customer Domain		3.55	30%	1.07
OD	Operational Domain		3.90	50%	1.95
ORG	Organizational Domain		3.00	10%	0.30
MD	Management Domain		3.00	10%	0.30
				100%	
		Compiled Filter Score 3.62			

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.

Figure 43 Operational Assessment Summary – ITS Mainframe

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

Information Technology Services (ITS) – Service Desk

	ITS - Service Desk Operational Assessment Summary	Low Moderate High / 1 2 3 4 5	Factor Score	Filter Weight	Filter Score
CD	Customer Domain		2.90	30%	0.870
OD	Operational Domain		3.75	50%	1.875
ORG	Organizational Domain		3.00	10%	0.300
MD	Management Domain		3.00	10%	0.300
				100%	
		Compiled Filter Score 3.35			

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.

Figure 44 Operational Assessment Summary – ITS Service Desk

Recommendations

➢ Develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

Information Technology Services (ITS) – Servers
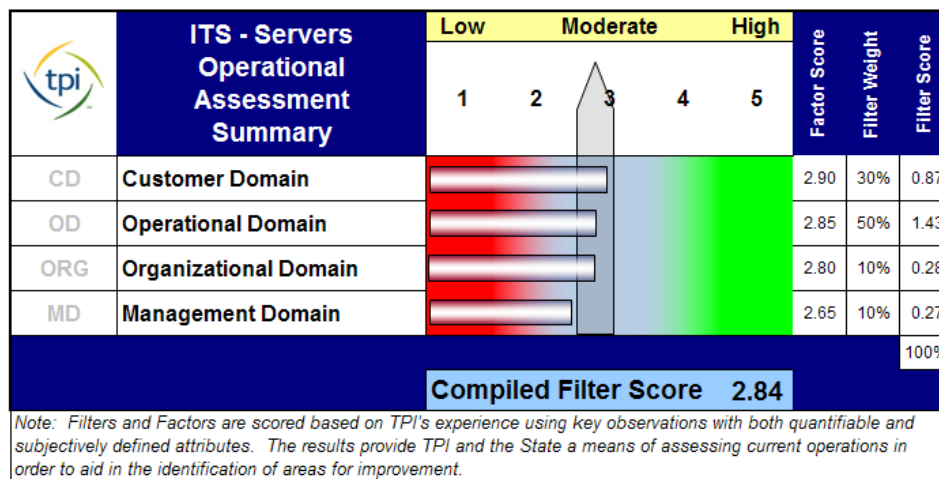
Figure 45 Operational Assessment Summary – ITS Servers

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Engage Agency to incorporate 'small agency' perspective and reduce the perception of the ITS solution as "one-size fits all".

Information Technology Services (ITS) – End User Computing (EUC)

Figure 46 Operational Assessment Summary – ITS EUC

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

Office of the Lt. Governor (LTGOV)

Figure 47 Operational Assessment Summary – LT. Gov

Recommendations

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Engage ITS to ensure Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) are clear and join Disaster Recovery testing is performed.

➢ Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.

North Carolina Industrial Commission (NCIC)
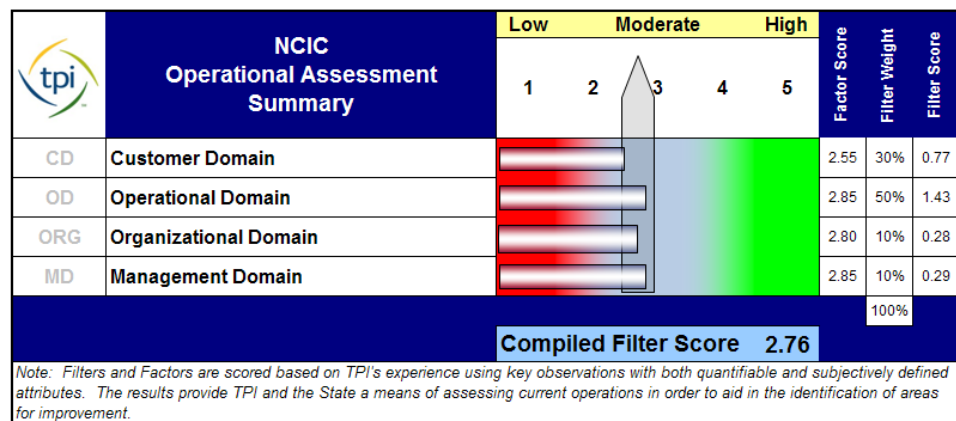
Figure 48 Operational Assessment Summary – NCIC

Recommendations

➢ Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Engage ITS to ensure Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) are clear and join Disaster Recovery testing is performed.

➢ Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.

Office of State Budget and Management (OSBM)

OSBM Operational Assessment Summary	Low	Moderate	High	Factor Score	Filter Weight	Filter Score
	1	2 3	4 5			
CD Customer Domain				2.65	30%	0.795
OD Operational Domain				2.50	50%	1.250
ORG Organizational Domain				2.80	10%	0.280
MD Management Domain				2.85	10%	0.290
					100%	
		Compiled Filter Score	2.61			

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.

Figure 49 Operational Assessment Summary – OSBM

Recommendations

➢ Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Address organizational needs for attracting and retaining of IT personnel for the Agency.

➢ Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.

Office of State Personnel (OSP)

Figure 50 Operational Assessment Summary – OSP

Recommendations

➤ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➤ Continue to work with ITS to develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➤ Engage ITS to ensure Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) are clear and join Disaster Recovery testing is performed.

➤ Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support and new development requests.

➤ Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

Wildlife Resource Commission (WRC)

	Operational Assessment Summary	Low 1	2	Moderate 3	4	High 5	Factor Score	Filter Weight	Filter Score
CD	Customer Domain						3.00	30%	0.90
OD	Operational Domain						2.95	50%	1.48
ORG	Organizational Domain						2.80	10%	0.28
MD	Management Domain						2.80	10%	0.28
				Compiled Filter Score	2.94			100%	

Note: Filters and Factors are scored based on TPI's experience using key observations with both quantifiable and subjectively defined attributes. The results provide TPI and the State a means of assessing current operations in order to aid in the identification of areas for improvement.

Figure 51 Operational Assessment Summary – WRC

Recommendations

➢ Define Service Levels and implement regular monitoring and reporting to enable identification of areas for improvement.

➢ Establish formal process for obtaining Customer feedback and perception of service delivery to enable identification of areas for improvement.

➢ Develop formal corrective action plans to address issues and areas needing improvement, identified in the formal Customer feedback and Service Level reporting processes.

➢ Provide 'cost / chargeback' information to Customer to educate them on costs associated with service/support, and new development requests.

➢ Establish regular meetings and utilize ITS BRM to facilitate and validate alignment and integration of Agency IT service requirements with ITS service delivery, along with driving resolution to service issues.

Service Level Assessment

Approach

As part of the Data Collection phase, TPI provided a Service Level template to all respective State of North Carolina agencies to collect those current service levels that were currently being utilized in the delivery of services to their respective user community. TPI performed a review of existing agency service levels with the objective of assessing the extent to which those Service Levels are consistent with Best Practices and with those commonly found in the market.

Data used in this comparison comes from TPI's unique Service Level data base that contains over 11,000 records from Clients across the world. Where comparables were found, each Service Level was compared against those in the data base and assessed to fall in one of five categories:

Well Below Market

Below Market

At Market

Above Market

Well Above Market

The overall assessment was then determined based upon the individual comparisons made and TPI's experience and expertise regarding aggregation of the individual assessments.

Service Levels are established based on a number of factors including, but not limited to; business requirements, willingness and ability to pay and service definition. In that regard the assessment should be used to understand current state and provide directional guidance for modifications.

Service Level assessments were performed only for non-consolidated Agencies and ITS. The following were included within the scope of this assessment:

➢ Crime Control and Public Safety

➢ Department of Environment and Natural Resources

➢ Department of Health and Human Services

➢ Department of Correction

➢ Department of Revenue

➢ Department of Transportation

➢ Employment Security Commission

- ITS (includes SCIO Office)

- NC Wildlife Resource Commission

Summary

The aggregate assessment of the non-consolidated agencies and ITS is determined to be Below Market.
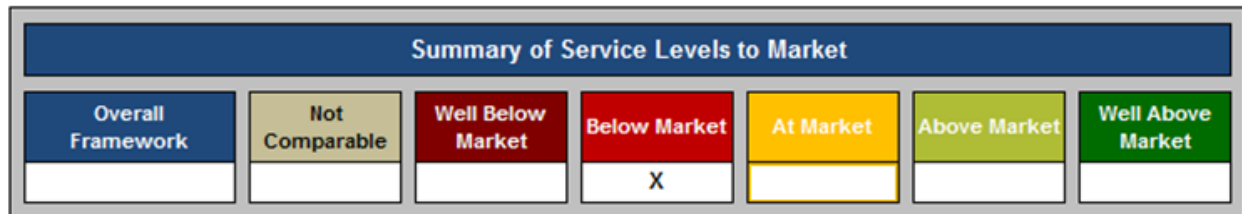
Summary of Service Levels to Market

Overall Framework	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
			X			

While service is generally perceived as being good when assessed by the IT and business organizations, the number, type and target performance levels are assessed as being below market levels; therefore the actual level of service rendered is low.

Service level Assessment Recommendations

It is recommended that the State should direct its ITS organization to work with Agency IT organizations and Agency business representatives to develop, implement, measure and report on a set of IT Service Levels that are driven by business requirements and have a high degree of commonality across the State's IT organizations in terms of type, number, calculation algorithm, measurement tool, reporting mechanism, etc.

It is recommended that a broad spectrum of Service Levels be developed in the following categories:

Service Desk

Availability

Incident response and resolution

Workstation Break/Fix

Installation, Moves, Adds Changes

Asset Management

Request Fulfillment

Each Service Level should include, as a minimum:

A clearly understandable definition of the Service Level.

The formula used to calculate performance.

Any exceptions or exclusions identified (i.e. maintenance windows).

The measurement period.

The reporting requirements (including reporting interval, form of report, delivery method).

The tool/methodology used for collection and reporting.

The expected performance target (example 99.9%).

Documentation should be formalized in a Service Level Agreement between the IT organization and the business.

Regular and formal service levels reviews with stakeholders should be held and documented to ensure that service levels are up-to-date and remain effective over time.

Business needs and budgets should be documented as key inputs into defining the content, structure and performance targets of the service levels.

A standardized approach to Service Level monitoring and reporting against targets, showing both current and trend information should be developed and implemented.

The following show the Participating Agency results of the Service Level Assessment:

Crime Control and Public Safety (CCPS)

TPI Positioning of North Carolina's CCPS Service Levels to Market						
Service Levels	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
		X				

There are no Service Levels in place for CCPS and therefore assessed as Well Below Market.

Recommendations
- ➤ The objective of Service Levels is to measure the quality of the services rendered and to reflect the needs of the business. In that regard, the CCPS IT organization should work with business representatives to develop, implement measure and report on a set of IT Service Levels that are driven by business requirements.
- ➤ Consider as a minimum, developing Service Levels in the following categories:
  - o Service Desk
  - o Availability
  - o Incident response and resolution
  - o Workstation Break/Fix
  - o Installation, Moves, Adds Changes

- o   Asset Management
- o   Request Fulfillment

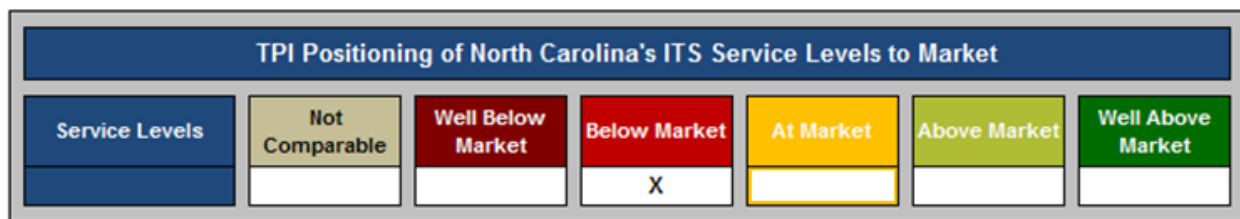➢ Each Service Level should include, as a minimum:

- o   A clearly understandable definition of the Service Level.

- o   The formula used to calculate performance.

- o   Any exceptions or exclusions identified (ex, maintenance windows).

- o   The measurement period.

- o   The reporting requirements (including reporting interval, form of report, delivery method).

- o   The tool/methodology used for collection and reporting.

- o   The expected performance target (example 99.9%).

➢ Documentation should be formalized in a Service Level Agreement between the IT organization and the business.

Department of Environment and Natural Resources (DENR)

TPI Positioning of North Carolina's DENR Service Levels to Market						
Service Levels	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
		X				

Figure 54 Summary of Service Levels to Market – DENR

There are no Service Levels in place for DENR and therefore assessed as Well Below Market.

Recommendations
➢ The objective of Service Levels is to measure the quality of the services rendered and to reflect the needs of the business. In that regard, the DENR IT organization should work with business representatives to develop, implement measure and report on a set of IT Service Levels that are driven by business requirements.
➢ Consider as a minimum, developing Service Levels in the following categories:
- o   Service Desk
- o   Availability
- o   Incident response and resolution
- o   Workstation Break/Fix
- o   Installation, Moves, Adds Changes
- o   Asset Management

- o Request Fulfillment
- ➢ Each Service Level should include, as a minimum:
  - o A clearly understandable definition of the Service Level.
  - o The formula used to calculate performance.
  - o Any exceptions or exclusions identified (ex, maintenance windows).
  - o The measurement period.
  - o The reporting requirements (including reporting interval, form of report, delivery method).
  - o The tool/methodology used for collection and reporting.
  - o The expected performance target (example 99.9%).
- ➢ Documentation should be formalized in a Service Level Agreement between the IT organization and the business.

Department of Health and Human Services (DHHS)

TPI Positioning of North Carolina's DHHS Service Levels to Market

Service Levels	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
				X		

Figure 55 Summary of Service Levels to Market – DHHS

State of North Carolina's DHHS Service Levels are generally within the market ranges.

A number of service levels are below market while a number are well above market. On balance the overall assessment is at market.

Recommendations
- ➢ Continue to review and refine Service Levels to reflect changing business requirements.
- ➢ The formula used to calculate performance should be more clearly defined for each Service Level.
- ➢ Documentation of all Service Levels should be formalized in a Service Level Agreement between the IT organization and the business.

Department of Correction (DOC)

TPI Positioning of North Carolina's DOC Service Levels to Market

Service Levels	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
			X			

Figure 56 Summary of Service Levels to Market – DOC

State of North Carolina's DOC Service Levels are below the market ranges.

Recommendations

- Expand the number and type of Service Levels to more broadly define and measure the services provided to the business.
- Consider as a minimum, developing and or expanding its Service Levels in the following categories (see Appendix B for additional examples and underlying elements):
  - Service Desk
  - Availability
  - Incident response and resolution
  - Workstation Break/Fix
  - Installation, Moves, Adds Changes
  - Asset Management
  - Request Fulfillment
- Each Service Level should include, as a minimum:
  - A clearly understandable definition of the Service Level.
  - The formula used to calculate performance.
  - Any exceptions or exclusions identified (ex, maintenance windows).
  - The measurement period.
  - The reporting requirements (including reporting interval, form of report, delivery method).
  - The tool/methodology used for collection and reporting.
  - The expected performance target (example 99.9%).
- Documentation should be formalized in a Service Level Agreement between the IT organization and the business.

Department of Revenue (DOR)

TPI Positioning of North Carolina's DOR Service Levels to Market						
Service Levels	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
				X		

<p align="center">Figure 57 Summary of Service Levels to Market – DOR</p>

State of North Carolina's DOR Service Levels are generally at the top of market ranges however those Service Levels are few in number.

Recommendations

- Expand the number and type of Service Levels to more broadly define and measure the services provided to the business.
- Consider as a minimum, developing and or expanding its Service Levels in the following categories:

- o Service Desk
- o Availability
- o Incident response and resolution
- o Workstation Break/Fix
- o Installation, Moves, Adds Changes
- o Asset Management
- o Request Fulfillment
- ➢ Documentation of the Service Levels should be formalized in a Service Level Agreement between the IT organization and the business.

Department of Transportation (DOT)

Service Levels	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
			X			

TPI Positioning of North Carolina's DOT Service Levels to Market

Figure 58 Summary of Service Levels to Market – DOT

State of North Carolina's DOT Service Levels are below the market ranges.

Recommendations

- ➢ Work with the business to review both the expected and minimum service level targets and to re-adjust targets as appropriate.
- ➢ Documentation of these revisions should be formalized in a Service Level Agreement between the IT organization and the business.

Employment Security Commission (ESC)

Overall Framework	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
	X					

TPI Positioning of North Carolina's ESC Service Levels to Market

Figure 59 Summary of Service Levels to Market – ESC

State of North Carolina's ESC Service Levels are generally within the market ranges.

It was not possible to assess the ESC service levels compared to market due to the lack of specific numeric targets.

Recommendations

- ➢ In general ESC's IT Service Levels are well documented. The following areas should be enhanced:
  - o The formula used to calculate performance should be defined for all Service Levels.

- The expected performance target for all Service Levels should be expressed in numerical terms (example 98% of all incidents resolved within 24 hours).
- Any exceptions or exclusions should be identified (ex, maintenance windows).

➢ Documentation should be formalized in a Service Level Agreement between the IT organization and the business.

➢ Consider as a minimum, developing and or expanding its Service Levels in the following categories:
- Service Desk
- Availability
- Incident response and resolution
- Workstation Break/Fix
- Installation, Moves, Adds Changes
- Asset Management
- Request Fulfillment

Information Technology Services (ITS)

	TPI Positioning of North Carolina's ITS Service Levels to Market					
Service Levels	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
			X			

Figure 60 Summary of Service Levels to Market – ITS

State of North Carolina's ITS Service Levels are generally below market ranges.

Recommendations

➢ Perform a review of its Service Levels to ensure that each contains:
- A clearly understandable definition of the Service Level.
- The formula used to calculate performance.
- Any exceptions or exclusions identified (ex, maintenance windows).
- The measurement period.
- The reporting requirements (including reporting interval, form of report, delivery method).
- The tool/methodology used for collection and reporting.
- The expected performance target (example 99.9%).

➢ It is not clear that the ITS Service Levels are derived based upon Agency needs. In that regard ITS should work with the Agencies to determine the extent to which the Service Levels are meeting business requirements.

Wildlife Resource Commission (WRC)

TPI Positioning of North Carolina's WRC Service Levels to Market

Service Levels	Not Comparable	Well Below Market	Below Market	At Market	Above Market	Well Above Market
		X				

Figure 61 Summary of Service Levels to Market – WRC

There are no Service Levels in place for WRC and therefore assessed as Well Below Market.

Recommendations

➢ Work with business representatives to develop, implement, measure and report on a set of IT Service Levels that are driven by business requirements.

➢ Consider as a minimum, developing Service Levels in the following categories (see Appendix B for additional examples and underlying elements):
  o Service Desk
  o Availability
  o Incident response and resolution
  o Workstation Break/Fix
  o Installation, Moves, Adds Changes
  o Asset Management
  o Request Fulfillment

➢ Each Service Level should include, as a minimum:
  o A clearly understandable definition of the Service Level.
  o The formula used to calculate performance.
  o Any exceptions or exclusions identified (ex, maintenance windows).
  o The measurement period.
  o The reporting requirements (including reporting interval, form of report, delivery method).
  o The tool/methodology used for collection and reporting.
  o The expected performance target (example 99.9%).

➢ Documentation should be formalized in a Service Level Agreement between the IT organization and the business.

Data Center Assessment Approach

TPI performed Data Center Assessments for 13 Data Centers associated with 10 Agencies identified by the State of North Carolina. TPI used a combination of interviews, data collection, and on-site walkthroughs to formulate its assessment. Specific questions were asked and answered involving multiple focus points and areas of concern. The collected information was used to determine TPI's interpretation of the Data Center's capability against two separate but related assessment classifications.

The first is a subset of the standards set by the Uptime Institute's criteria for Data Centers.

The following represents the Tier Criteria based on the Uptime Institute's classification of Data Center Tiers:

Uptime Institute Data Center Classification

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (base on Availability)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 62 Uptime Institute Data Center Classification

The second is a TPI created market based taxonomy that provides some observational information about certain data center characteristics and attributes. These physical visits and interviews are not intended to be an assessment to qualify the Data Centers or facilities, but to provide considerations for client awareness.

 ➢ The assessment is comprised of a physical observation, discussion with a data center representative, and formulation of validated notes

 ➢ The following categories are addressed:

   o Capabilities

   o Redundancy

   o Building Structure

   o Protection and Security

- o   Location

➤ Each element was scored on a scale of 1 to 5 (Low to High)

➤ Each element was weighted and a score is calculated for the category

➤ Category scores were summarized an a total score is was developed

Recommendations were developed based on observations, information gathered and experience with other public and private sector organizations.

The Data Center Assessment is an evaluation of current state operations and therefore the recommendations are in the context of improvements to existing operations and practices.

Summary

A number of general observations were noted during the site visit and interview of the indentified Data Centers:

➤ Generators - Almost all data centers have backup generators with sufficient amounts of fuel to provide emergency power.

➤ Expansion - Most data centers have adequate room for expansion, however, there is little anticipated demand due to consolidation/virtualization plans.

➤ Availability Tracked - Availability is not tracked automatically; therefore, availability percentages are estimated. There is some manual tracking being conducted; however, most do not track.

➤ HVAC - All data centers have sufficient cooling capability/capacity. With exception of one data center (DHHS-Central); all have multiple (backup or redundant) air handling/conditioning units.

➤ Network - About half of the data centers have dual carrier services into the facility; the remainders are provided by a single carrier.

➤ Fire Protection - Almost all data centers (exception CCPS) have fire protection systems, most are H20; however, a few utilize new gaseous fire suppression systems (i.e. FM200).

➤ Physical Condition - Most data centers were reasonably clean, orderly, and organized. Debris was encounter in only 2 data centers. (i.e. empty boxes, spare parts, loose cables).

➤ Security Cameras - Almost all data centers use security cameras at the facilities (inside and/or outside). Only a few do not have some form of video monitoring.

➤ UPS - Almost all data centers utilized UPS to mitigate interruptions in primary power supply (some have multiple power sources or dual UPS - A/B side); larger data centers utilize Battery Power as well.

- Security Access - Almost all data centers have badge access devices to allow entry (and record access). Additionally, sign-in sheets required at some sites.

- Staffing – Only the larger data centers have manned sites (generally 1+ shifts), Western and Eastern Data Centers have on-site staff 24 X 7.

- Miscellaneous - All relevant equipment is stored in racks.

- Miscellaneous - None of the sites were exposed to close proximity of risk. (i.e. chemical, nuclear).

- Miscellaneous - Limited exposure to hurricanes, tornados. No sites within flood plains.

- Of the assessed data centers, NCDCR, which is a consolidated Agency, has a data center facility located on the Agency's premises.

Ranking based on Uptime Institute Classification of Data Center Tiers

The assessment reviewed 13 (thirteen) of the State's Agency data center locations.

The capabilities of these data centers based on the Uptime Institute Classification of Data Center Tiers were ranked based on a 1 to 4 tier scale (4 being the best).

Ranking based on TPI Taxonomy

The capabilities of these data centers based on the TPI Taxonomy were ranked based on a 1 to 5 scale (5 being the best).

Overall Assessment Results

Data Center	Uptime Institute	TPI Assessment
CCPS	Tier 2+	2.82
DCR	Tier 2	2.75
DENR Archdale	Tier 2	2.74
DENR Capital	Tier 2	2.58
DHHS Central	Tier 2+	2.83
DHHS Public Health	Tier 3+	3.01
DOC	Tier 3	2.97
DOR	Tier 3	2.90
DOT	Tier 3	2.98
ESC	Tier 3	3.01
ITS Eastern Data Center	Tier 3+ (4-)	3.38
ITS Western Data Center	Tier 3+ (4-)	3.46
WRC	Tier 2	2.74
Summary Scoring	**Tier 2+**	**2.93**

Figure 63 Summary of Data Center Assessments

TPI recommends migrating infrastructure assets, to the extent that they are not uniquely or critically supporting a locally hosted application or system, to the ITS Western Data Center facility. The determination and decisions the State must make in adopting this recommendation is the identification of those infrastructure assets that are truly required to remain locally hosted or supported, not just based on a historical or convenience basis.

Consideration must be taken to address the network bandwidth, speed, and potentially higher transport costs that would be required to facilitate the increased network data traffic resulting from the migration of infrastructure assets from locally supported locations to the ITS Western Data Center.

For those Data Center that exist beyond any migration to the Western Data Center, the State should review identified risks, such as: single network data sources (single point for failure), unmonitored (unmanned) sites which host infrastructure assets supporting critical applications and/or systems, less than ideal fire protection systems, and manual security processes (in lieu of automated), and develop risk mitigation plans to counter those risks.

Crime Control and Prevention (CCPS)

The CCPS Data Center is assessed as Tier 2+.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 64 Uptime Assessment Rating – CCPS

Based upon the TPI Taxonomy the CCPS Data Center is rated as 2.82.

	CCPS Data Center Assessment Areas	Low 1	2	Moderate 3	4	High 5	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities						2.40	20%	0.48
RED	Redundancy Features						3.20	20%	0.64
BLD	Data Center Building Structure						2.90	20%	0.58
P&S	Available Protection and Security						2.60	20%	0.52
LOC	Data Center Location						3.00	20%	0.60
								100%	2.82
						Overall Score	2.82		

Figure 65 TPI Taxonomy Assessment Rating – CCPS

Recommendations

➢ Install automatic fire detection and alarm system to reduce risk.

➢ Install fire suppression system (i.e. FM200) to reduce risk.

➢ Complete build out of automatic security alarm system to reduce risk.

➢ Consider additional power source path to reduce risk of failure.

➢ Implement environmental monitoring controls to reduce risk.

➢ Alternatively, consider migrating to Joint Force Headquarters

North Carolina Department of Cultural Resources (NCDCR)

The NCDCR Data Center is assessed as Tier 2.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 66 Uptime Assessment Rating – DCR

Based upon the TPI Taxonomy the NCDCR Data Center is rated as 2.75.

	DCR Data Center Assessment Areas	Low ... Moderate ... High (1–5)	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities		2.65	20%	0.53
RED	Redundancy Features		2.25	20%	0.45
BLD	Data Center Building Structure		2.70	20%	0.54
P&S	Available Protection and Security		2.95	20%	0.59
LOC	Data Center Location		3.20	20%	0.64
				100%	2.75
			Overall Score	2.75	

Figure 67 TPI Taxonomy Assessment Rating – DCR

Recommendations

➢ Perform capacity/usage planning to determine if the data center should be retained (small number of servers).

➢ Upgrade of UPS for all equipment. Currently use in rack UPS for servers only.

- Provide for dual entry points for Voice and Data Network connectivity.

- Establish Data Network redundancy to reduce risk.

- Incorporate automatic badge entrance system to record NCDCR data center entries.

- Remove debris/storage/packaging items/material from data center.

Department of Environment and Natural Resources (DENR) - Archdale

The DENR-Archdale Data Center is assessed as Tier 2.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 68 Uptime Assessment Rating – DENR Archdale Data Center

Based upon the TPI Taxonomy the DENR-Archdale Data Center is rated as 2.74.

	DENR Archdale Data Center Assessment Areas	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities	2.10	20%	0.42
RED	Redundancy Features	2.75	20%	0.55
BLD	Data Center Building Structure	2.70	20%	0.54
P&S	Available Protection and Security	2.95	20%	0.59
LOC	Data Center Location	3.20	20%	0.64
			100%	2.74
	Overall Score	2.74		

Figure 69 TPI Taxonomy Assessment Rating – DENR Archdale Data Center

Recommendations

➢ Continue the migration of data center equipment to ITS.

➢ Remove debris/storage/packaging items/material from data center.

Department of Environment and Natural Resources (DENR) – Capital

The DENR-Capital Data Center is assessed as Tier 2.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 70 Uptime Assessment Rating – DENR Capital Data Center

Based upon the TPI Taxonomy the DENR-Capital Data Center is rated as 2.58.

	DENR - Capital Data Center Assessment Areas	Low		Moderate		High	Filter Values	Filter Weighting	Score
		1	2	3	4	5			
CAP	Data Center Capabilities						2.10	20%	0.42
RED	Redundancy Features						2.55	20%	0.51
BLD	Data Center Building Structure						2.55	20%	0.51
P&S	Available Protection and Security						2.70	20%	0.54
LOC	Data Center Location						3.00	20%	0.60
								100%	2.58
				Overall Score	2.58				

Figure 71 TPI Taxonomy Assessment Rating – DENR Capital Data Center

Recommendations

➢ Continue the migration of data center equipment to ITS.

Department of Health and Human Services (DHHS) - Central

The DHHS-Central Data Center is assessed as Tier 2+.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 72 Uptime Assessment Rating – DHHS Central Data Center

Based upon the TPI Taxonomy the DHHS-Central Data Center is rated as 2.83.

DHHS - Central Data Center Assessment Areas	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities	2.60	20%	0.52
RED	Redundancy Features	2.90	20%	0.58
BLD	Data Center Building Structure	2.90	20%	0.58
P&S	Available Protection and Security	2.90	20%	0.58
LOC	Data Center Location	2.85	20%	0.57
			100%	2.83
Overall Score	2.83			

Figure 73 TPI Taxonomy Assessment Rating – DHHS Central Data Center

Recommendations

➢ Obtain additional portable HVAC units for data center.

➢ Incorporate automatic badge entrance system to record data center entries.

> ➢ Consider additional power source path.

> ➢ Establish Data Network redundancy to reduce risk.

Department of Health and Human Services (DHHS) – Public Health

The DHHS-Public Health Data Center is assessed as Tier 3+.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 74 Uptime Assessment Rating – DHHS Public Health DC

Based upon the TPI Taxonomy the DHHS-Public Health Data Center is rated as 3.01.

	DHHS - Public Health Data Center Assessment Areas	Low ... Moderate ... High 1 2 3 4 5	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities		3.00	20%	0.60
RED	Redundancy Features		2.85	20%	0.57
BLD	Data Center Building Structure		3.20	20%	0.64
P&S	Available Protection and Security		2.80	20%	0.56
LOC	Data Center Location		3.20	20%	0.64
				100%	3.01
			Overall Score	3.01	

Figure 75 TPI Taxonomy Assessment Rating – DHHS Public Health DC

Recommendations

> ➢ Install fire suppression system (i.e. FM200).

- Incorporate automatic badge entrance system to record data center entries.

- Incorporate cameras at entrance and inside data center to record entries.

- Consider additional power source path.

Department of Correction (DOC)

The DOC Data Center is assessed as Tier 3.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 76 Uptime Assessment Rating – DOC

Based upon the TPI Taxonomy the DOC Data Center is rated as 2.97.

	DOC Data Center Assessment Areas	Low 1	2	Moderate 3	4	High 5	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities						2.50	20%	0.50
RED	Redundancy Features						2.80	20%	0.56
BLD	Data Center Building Structure						3.00	20%	0.60
P&S	Available Protection and Security						3.35	20%	0.67
LOC	Data Center Location						3.20	20%	0.64
							100%		2.97
				Overall Score	2.97				

Figure 77 TPI Taxonomy Assessment Rating – DOC

Recommendations

➢ Provide for dual entry points for Voice and Data Network connectivity to improve reliability and eliminate single point of failure.

➢ Establish Data Network redundancy to reduce risk.

➢ Consider additional power source path to improve reliability and reduce risk.

Department of Revenue (DOR)

The DOR Data Center is assessed as Tier 3.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 78 Uptime Assessment Rating – DOR

Based upon the TPI Taxonomy the DOR Data Center is rated as 2.90.

	DOR Data Center Assessment Areas	Low 1	2	Moderate 3	4	High 5	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities						2.65	20%	0.53
RED	Redundancy Features						2.85	20%	0.57
BLD	Data Center Building Structure						3.00	20%	0.60
P&S	Available Protection and Security						3.00	20%	0.60
LOC	Data Center Location						3.00	20%	0.60
							100%	2.90	
					Overall Score	2.90			

Figure 79 TPI Taxonomy Assessment Rating – DOR

Recommendations

➢ Establish Data Network redundancy to reduce risk.

➢ Consider additional power source path to improve reliability and reduce risk.

➢ Consider utility consumption monitoring to identify opportunities to improve cost efficiencies/reductions.

Department of Transportation (DOT)

The DOT Data Center is assessed as Tier 3.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 80 Uptime Assessment Rating – DOT

Based upon the TPI Taxonomy the DOT Data Center is rated as 2.98.

	DOT Data Center Assessment Areas	Low 1	2	Moderate 3	4	High 5	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities						2.70	20%	0.54
RED	Redundancy Features						3.15	20%	0.63
BLD	Data Center Building Structure						3.00	20%	0.60
P&S	Available Protection and Security						3.25	20%	0.65
LOC	Data Center Location						2.80	20%	0.56
								100%	2.98
						Overall Score	2.98		

Figure 81 TPI Taxonomy Assessment Rating – DOT

Recommendations

➢ Consider additional power source path to improve reliability and reduce risk.

➢ Complete the installation of cameras outside of data center entrance.

➢ Identify a formal back-up site/location. Develop a Disaster Recovery plan and conduct tests, at least annually.

Employment Security Commission (ESC)

The ESC Data Center is assessed as Tier 3.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 82 Uptime Assessment Rating – ESC

Based upon the TPI Taxonomy the ESC Data Center is rated as 3.01.

	ESC Data Center Assessment Areas	Low 1	2	Moderate 3	4	High 5	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities						3.20	20%	0.64
RED	Redundancy Features						2.75	20%	0.55
BLD	Data Center Building Structure						2.90	20%	0.58
P&S	Available Protection and Security						3.00	20%	0.60
LOC	Data Center Location						3.20	20%	0.64
								100%	3.01
				Overall Score	3.01				

Figure 83 TPI Taxonomy Assessment Rating – ESC

Recommendations

➢ Consider tracking availability using automated monitoring tools to enable identification of problem areas and improve overall service quality and reliability.

➢ Consider additional power source path to improve reliability and reduce risk.

➢ Consider utility consumption monitoring to identify opportunities to improve cost efficiencies/reductions.

Information Technology Services (ITS) - Eastern

The ITS-Eastern Data Center is assessed as Tier 3+ (4-).

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	(1)	2	2
Redundancy in the power distribution paths	No	No	Yes	(Yes)
Redundant and physically separate power	No	No	No	(Yes)
Redundant components in equipment	No	Yes	Yes	(Yes)
Redundant HVAC	No	No	Maybe	(Yes)
Staffing	None	None	1+ Shift	(24 x 7)
Site Availability	99.67%	99.75%	99.98%	(99.99%)
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	(0.8 Hrs)
Single points of failure	Many	Many	Some	(None)

Figure 84 Uptime Assessment Rating – ITS Eastern Data Center

Based upon the TPI Taxonomy the ITS-Eastern Data Center is rated as 3.38.

	ITS - Eastern Data Center Assessment Areas	Low — Moderate — High (1 2 3 4 5)	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities		3.50	20%	0.70
RED	Redundancy Features		3.55	20%	0.71
BLD	Data Center Building Structure		3.20	20%	0.64
P&S	Available Protection and Security		3.45	20%	0.69
LOC	Data Center Location		3.20	20%	0.64
				100%	3.38
		Overall Score	3.38		

Figure 85 TPI Taxonomy Assessment Rating – ITS Eastern Data Center

Recommendations

➢ Consider tracking overall/site availability using automated monitoring tools to enable identification of problem areas and improve overall service quality and reliability.

➢ Consider additional power source path to improve reliability and reduce risk.

Information Technology Services (ITS) - Western

The ITS-Western Data Center is assessed as Tier 3+ (4-).

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 86 Uptime Assessment Rating – ITS Western Data Center

Based upon the TPI Taxonomy the ITS-Western Data Center is rated as 3.46.

	ITS - Western Data Center Assessment Areas	Low Moderate High 1 2 3 4 5	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities		3.70	20%	0.74
RED	Redundancy Features		3.55	20%	0.71
BLD	Data Center Building Structure		3.35	20%	0.67
P&S	Available Protection and Security		3.50	20%	0.70
LOC	Data Center Location		3.20	20%	0.64
				100%	3.46
		Overall Score	3.46		

Figure 87 TPI Taxonomy Assessment Rating – ITS Western Data Center

Recommendations

➢ Consider tracking overall/site availability using automated monitoring tools to enable identification of problem areas and improve overall service quality and reliability.

➢ Consider additional power source path to improve reliability and reduce risk.

Wildlife Resource Commission (WRC)

The WRC Data Center is assessed as Tier 2.

Capability	Tier 1	Tier 2	Tier 3	Tier 4
Distribution paths (power source)	1	1	2	2
Redundancy in the power distribution paths	No	No	Yes	Yes
Redundant and physically separate power	No	No	No	Yes
Redundant components in equipment	No	Yes	Yes	Yes
Redundant HVAC	No	No	Maybe	Yes
Staffing	None	None	1+ Shift	24 x 7
Site Availability	99.67%	99.75%	99.98%	99.99%
Annual Site Downtime (including Scheduled Downtime)	28.8 Hrs	22.0 Hrs	1.6 Hrs	0.8 Hrs
Single points of failure	Many	Many	Some	None

Figure 88 Uptime Assessment Rating – WRC

Based upon the TPI Taxonomy the WRC Data Center is rated as 2.74.

	WRC Data Center Assessment Areas	Filter Values	Filter Weighting	Score
CAP	Data Center Capabilities	2.35	20%	0.47
RED	Redundancy Features	2.40	20%	0.48
BLD	Data Center Building Structure	2.90	20%	0.58
P&S	Available Protection and Security	3.05	20%	0.61
LOC	Data Center Location	3.00	20%	0.60
			100%	2.74
	Overall Score	2.74		

Figure 89 TPI Taxonomy Assessment Rating – WRC

Recommendations

 ➢ Establish a formal backup site, develop and test Disaster Recovery plan.

 ➢ Consider tracking overall/site availability using automated monitoring tools to enable identification of problem areas and improve overall service quality and reliability.

 ➢ Consider an additional power source path to improve reliability and reduce risk.

➢   Obtain additional HVAC units for the data center.

➢   Consider dual entry points for Voice and Data Network connectivity.

➢   Establish Data Network redundancy to reduce risk.

Information Technology Service Management (ITSM)

Approach

Today, as every organization tries to deliver value from IT while managing an increasingly complex range of IT-related risks, the effective use of best practices can help avoid rework, optimize the use of scarce IT resources and reduce the occurrence of major IT risks, such as:

- ➤ Project failures

- ➤ Wasted investments

- ➤ Security breaches

- ➤ System crashes

- ➤ Failures by service providers to understand and meet customer requirements

IT best practices are important because:

- ➤ Management of IT is critical to the success of the State enterprise strategy

- ➤ They help enable effective governance of IT activities

- ➤ They provide many benefits, including efficiency gains, less reliance on experts, fewer errors, and increased trust from the business side of the organization

- ➤ Best practices help meet regulatory requirements for IT controls in areas such as privacy and financial reporting

- ➤ Best practices help organizations assess how they are performing against generally accepted standards and against their peers

To determine the maturity of the IT processes with regard to the Participating Agencies, TPI used a self assessment survey based on the best practices identified within the globally accepted Information Technology Information Library or "ITIL" as it is commonly referenced and upon an extract of process elements from the ISO/IEC 20000 standard for IT service management. ITIL is a set of concepts and practices for managing Information Technology (IT) services, IT development and IT operations.

The tool used for the assessment is comprised of process requirements and process recommendations. Both of these factors were evaluated with weighting factors assigned to distinguish relative importance.

State of North Carolina
ITSM Assessment
Assessment Model

	Category Weight	Factor Weights

Service Desk		**Process Weight:**	**9.1**

Process Requirements	60	
A Service Desk exists as the single point of contact for users of IT services.		40
The Service Desk is responsible for facilitating the restoration of IT services when they fail.		10
The Service Desk records all calls.		25
The Service Desk monitors the progress of all incidents and reports the status of incidents to users.		15
The Service Desk closes all incident records upon confirmation with the reporting user that the service has been restored to the user's satisfaction.		10
Sum of Factor Weights		*100*

Process Recommendations	40	
Service Desk staff are aware of and sufficiently trained on the vital business functions that are supported by IT services.		25
The Service Desk has access to a knowledge base of problems and known errors.		20
The Service Desk has access to the configuration management database.		10
The Service Desk is responsible for escalating incidents and requests according to defined escalation policies and procedures.		25
The Service Desk is responsible for recording and initiating service requests.		10
The Service Desk is able to execute standard changes as defined by change management.		10
Sum of Factor Weights		*100*

Figure 90 ITSM Process and Factor Weights

The requirements and recommended evaluations for each process were aggregated by process and agency.
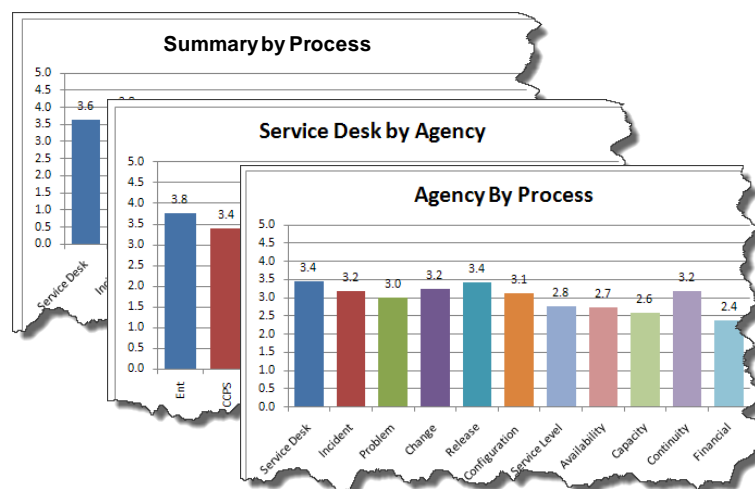
Figure 91 ITSM Report Formats

Additionally raw scores for each area were combined and grouped into performance quartiles.

Requirements

ITIL Process	Max Score
Service Desk	25
Incident	30
Problem	35
Change	50
Release	65
Configuration	65
Service Level	30
Availability	25
Capacity	25
Continuity	50
Financial	20
Possible Rating Points **Actual as % of Total**	420

Recommended

ITIL Process	Max Score
Service Desk	30
Incident	45
Problem	50
Change	40
Release	50
Configuration	50
Service Level	40
Availability	25
Capacity	20
Continuity	55
Financial	40
Possible Rating Points **Actual as % of Total**	445

Combined

ITIL Process	Max Score
Service Desk	55
Incident	75
Problem	85
Change	90
Release	115
Configuration	115
Service Level	70
Availability	50
Capacity	45
Continuity	105
Financial	60
Possible Rating Points **Actual as % of Total**	865

1st	
2nd	
3rd	
4th	

Figure 92 ITSM Performance Quartiles

The results of this view provided insight regarding where each process ranked by performance quartiles.

Observations and recommendations were made for each Agency and aggregated.

The extent to which performance was distributed by quartile resulted in an overall recommendation.

Combined

ITIL Process	Max Score	Agency	
Service Desk	55	45	82%
Incident	75	64	85%
Problem	85	55	65%
Change	90	48	53%
Release	115	36	31%
Configuration	115	58	50%
Service Level	70	30	43%
Availability	50	28	56%
Capacity	45	20	44%
Continuity	105	46	44%
Financial	60	42	70%

Possible Rating Points	865	472
Actual as % of Total		55%

1st	2
2nd	5
3rd	4
4th	0

Summary Rating	Improve

Assessment Summary Rating:

- **Good**
- **Improve**
- **Deficient**

Figure 93 ITSM Summary Example

Assessment and Observations

The results of the survey show the maturity level rating for each process capability area as defined within the ITIL best practice and ISO/IEC 2000 standard. These process capability areas (i.e. Change management, Release management, etc.) cross all Towers (i.e. Mainframe, Servers, Help Desk).

The data was gathered from the INSA agencies through the use of a self assessment surveys. This data was subsequently validated during interview sessions.

A three (3) rating on the assessment's five point scale (1-Low / 5-High) indicates general attainment of operational maturity with a rating of 3.5 and above indicating evidence exists of sustained and improving operational maturity. The Assessment scoring ranks are as follows:

1   **=** Not at all

2   = To a little extent

3   = To a reasonable extent

4   = To a significant extent

5   = To a very great extent

Ratings should not be viewed as representing a comprehensive "audit" of the IT operational environment, but rather a vehicle to understand current maturity and identify areas for potential improvement.

The graph below shows the overall summary of results for all Participating Agencies results for each process category assessed. The composite results were derived by averaging the process category scores from all of the individual surveys.

The Overall ITSM Assessment Summary for all Participating Agencies is rated as "Improve" and is as follows:
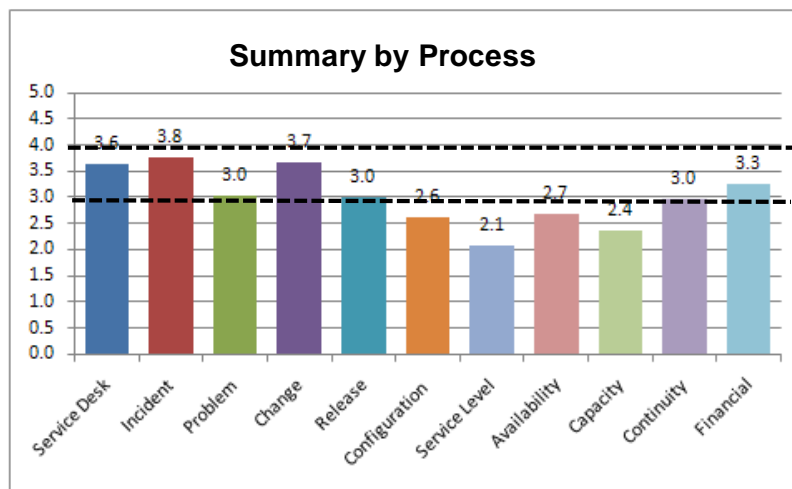
Figure 94 ITSM Summary by Process

Seven of the eleven process areas fall within the goal range. The Service Level process is the least mature.
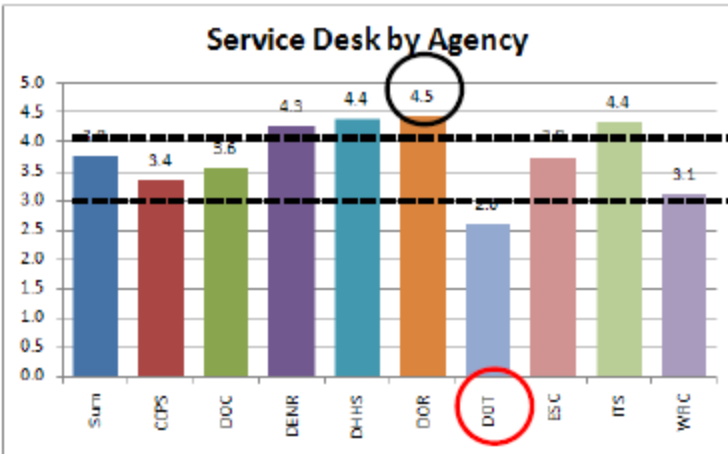
Four Agencies Service Desk process is assessed as above the goal range, one Agency's process is assessed as below goal range.
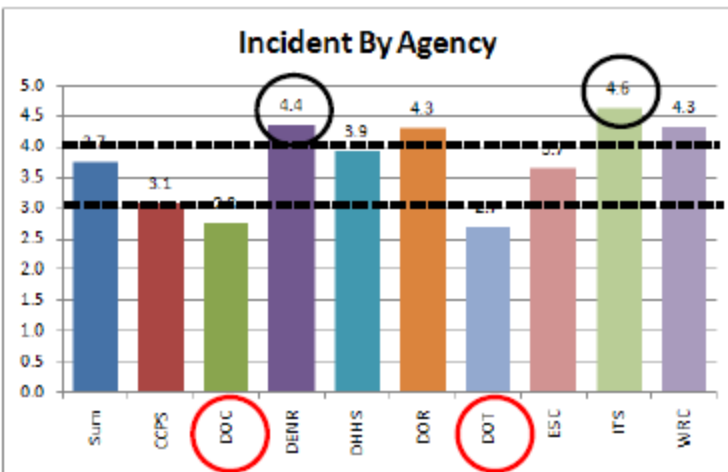
In general Incident Management is viewed as within goal range.

Figure 95 Service Desk and Incident by Agency
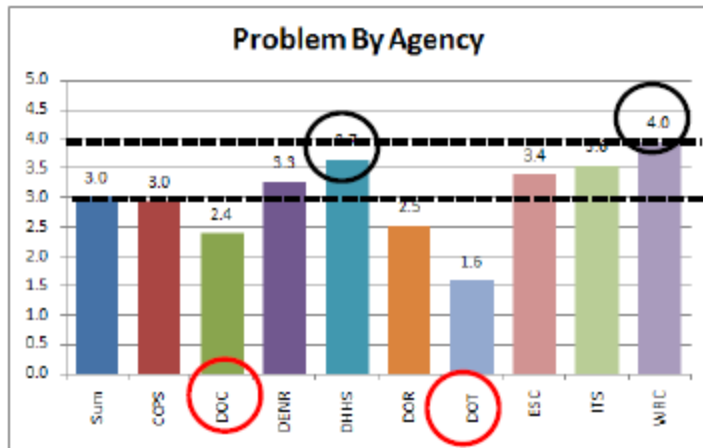
Six of the ten Agencies' Problem Management process is assessed as within the goal range.

The DOT Problem Management process is well below goal range.
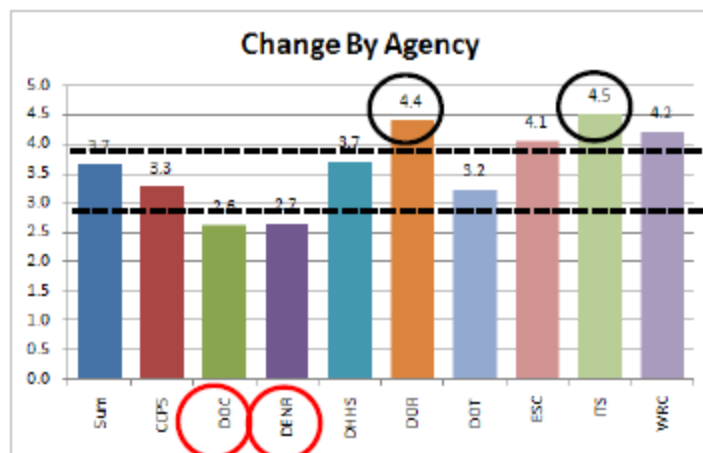
Two Agencies' Change Management process is assessed as below goal range.

Figure 96 Problem and Change by Agency

Service Level By Agency
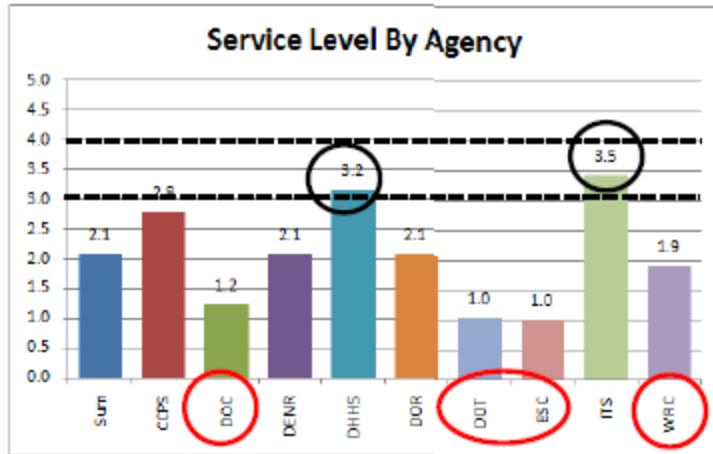
Only two Agencies' Service Level Management Process is assessed as being within the goal range.

Four Agencies' Service Level Management Process is assessed as well below Goal Range.

Availability By Agency
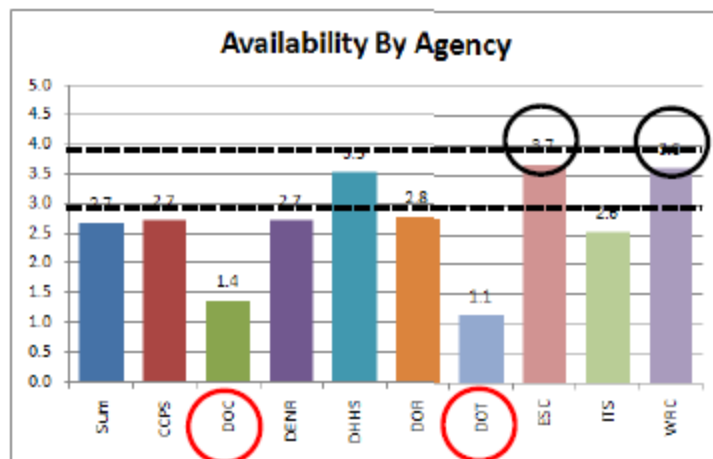
Three Agencies' Availability Management Process is assessed as within goal range.

Figure 97 Service Level and Availability by Agency
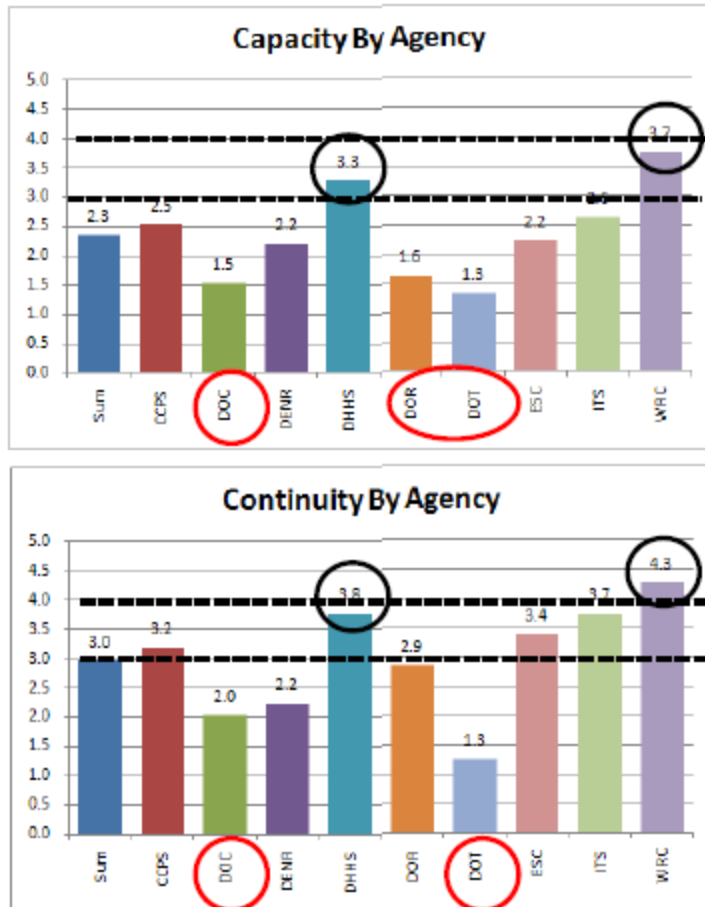
Only two Agencies' Capacity Management Process is assessed as being within the goal range.

Overall the Capacity Management Process is below goal range.

Five Agencies' Continuity Management Process is assessed as within goal range.

Figure 98 Capacity and Continuity

Figure 99 Financial Management
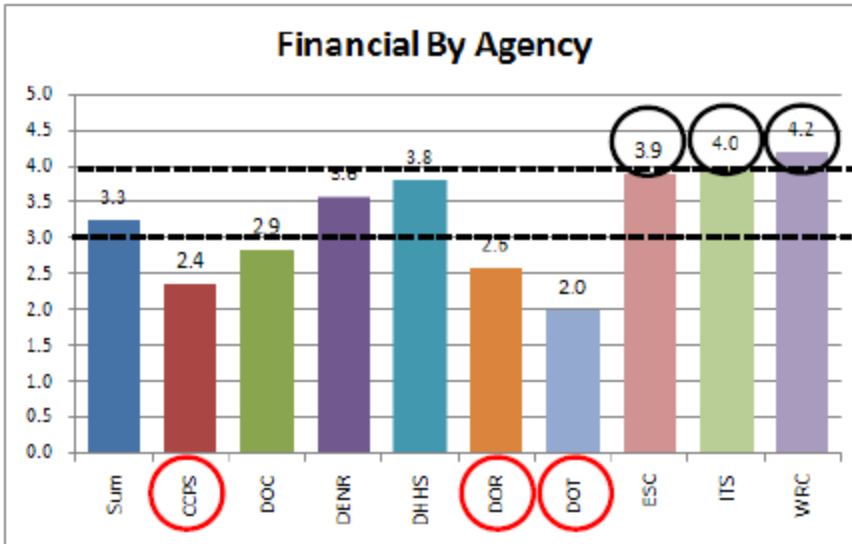
Half of the Agencies' Financial Management Process is assessed as being within the goal range.

ITSM Assessment Recommendations

TPI recommends that the Participating Agencies within the State strengthen their Service Level Management process. In that regard, it is recommended that a broad spectrum of Service Levels be developed in the following categories:

> ➢ Service Desk
>
> ➢ Availability
>
> ➢ Incident response and resolution
>
> ➢ Workstation Break/Fix
>
> ➢ Installation, Moves, Adds Changes
>
> ➢ Asset Management
>
> ➢ Request Fulfillment

Each Service Level should include, as a minimum:

> ➢ A clearly understandable definition of the Service Level.
>
> ➢ The formula used to calculate performance.
>
> ➢ Any exceptions or exclusions identified (ex, maintenance windows).
>
> ➢ The measurement period.
>
> ➢ The reporting requirements (including reporting interval, form of report, delivery method).

➢ The tool/methodology used for collection and reporting.

➢ The expected performance target (example 99.9%).

Documentation should be formalized in a Service Level Agreement between the IT organization and the business.

Formal monthly Service Level Performance reviews should be established between the IT organization and business representatives.

Comparison of Current Costs to Souring Market Price Summary

Approach

As part of the Current State Baseline Development Phase, TPI collected financial and volumetric data to support a Mark-to-Market analysis of the Participating Agencies expenditures for each in-scope tower. This data was transmitted to TPI's Mark-to-Market specialists who performed the assessment in accordance with the methodology outlined in Section B above. In certain cases TPI was unable to map elements directly to a comparable range. In this situation TPI used the closest comparable which, in TPI's judgment, did not materially affect the results of the analysis. A summary of the assessment is provided below. For the full comparison for each Participating Agency see Appendix C - Mark-to-Market Report.

Certain Agencies' Information Technology services are primarily provided by the Information Technology Services (ITS) organization. These agencies are termed "consolidated agencies" and in that regard the Mark-to-Market analysis associated with the ITS organization is representative of the services provided to those agencies by ITS. Separate Mark-to-Market analysis were performed for the "non-consolidated agencies" and for ITS. Some of the in-scope services for non-consolidated agencies are also provided by ITS (example: mainframe and network services).

Non Consolidated Agencies	
Crime Control and Public Safety	CCPS
Department of Environment and Natural Resources	DENR
Department of Health and Human Services	DHHS
Department of Correction	DOC
Department of Revenue	DOR
Department of Transportation	DOT
Employment Security Commission	ESC
ITS (includes SCIO Office)	ITS
NC Wildlife Resource Commission	WRC

Table 57 M2M Listing of In-Scope Agencies

The Mark-to-Market analysis was conducted based upon grouping of services into "Towers". Those Towers are:

- ➤ Mainframe
- ➤ Application Servers – Windows
- ➤ Application Servers – Unix
- ➤ Utility Servers
- ➤ Managed Network Services – WAN
- ➤ Managed Network Services – LAN
- ➤ Managed Network Services – Voice
- ➤ End User Computing

➤ Service Desk

Each Tower was compared to actual marketplace transactions within the past 18 months of similar scale, scope and geography. Data used for comparisons excludes certain items as part of normalization:

➤ Hardware (including maintenance) in Application Servers, Storage and EUC
➤ Application Software
➤ Carrier charges for Network

The M2M comparison range provides only for a general indicator of pricing, there is no guarantee implied regarding obtaining services at any specific price point.

Summary

The Mark-to-Market assessment resulted in two of the service towers having a potential for savings opportunities. Both the Mainframe and WAN (Managed Network Services) towers indicate a potential for greater than 20% savings. Service towers where savings potential was less than 5% or negative as represented, in Figure 100 following, as less than 5% opportunity. TPI applies a conservative estimation of savings when the judgment of the opportunity to market is greater than 20%. In that regard the potential savings estimate for those situations (Mainframe and WAN) are presented as 20% with the potential savings estimate calculations likewise 20% of the current spend.

| Tower | State of North Carolina - Composite Total Cost | TPI Judgment of Opportunity to Market | | | | | Potential Savings ($ Millions) | |
		< 5 %	5 < 10 %	10 < 15 %	15 < 20 %	> 20 %	Low $ Range	High $ Range
Mainframe	$ 41.0 M					X	$ 8.2 M	$ 8.2 M
Windows	$ 12.3 M	X					$ 0.0 M	$ 0.0 M
Unix	$ 3.0 M	X					$ 0.0 M	$ 0.0 M
Utility Servers	$ 6.2 M	X					$ 0.0 M	$ 0.0 M
WAN	$ 12.2 M					X	$ 2.4 M	$ 2.4 M
LAN	$ 10.1 M	X					$ 0.0 M	$ 0.0 M
Voice	$ 8.6 M	X					$ 0.0 M	$ 0.0 M
EUC	$ 25.3 M	X					$ 0.0 M	$ 0.0 M
SD	$ 5.7 M	X					$ 0.0 M	$ 0.0 M
Total	$ 124.5 M						$ 10.6 M	$ 10.6 M

Figure 100 M2M Summary - Judgment of Opportunity to Market

Mainframe Services

Market comparisons for Mainframe Services were based upon the ITS data which represent the costs of providing Mainframe Services to the Participating Agencies. Agency specific and the composite costs include ITS chargeback and, if appropriate, internal Agency costs. ITS' cost basis per utilized MIP is $11,717 per year compared to the market range of $5,500 to $8,800. These costs are $10,209,500 per year above the upper range and $21,759,500 above the low market range. Based upon the Mark-to-

Market comparison the mainframe tower is a candidate for external sourcing. Figure 101 following graphically represents the ITS and Participating Agencies' position relative to the market.
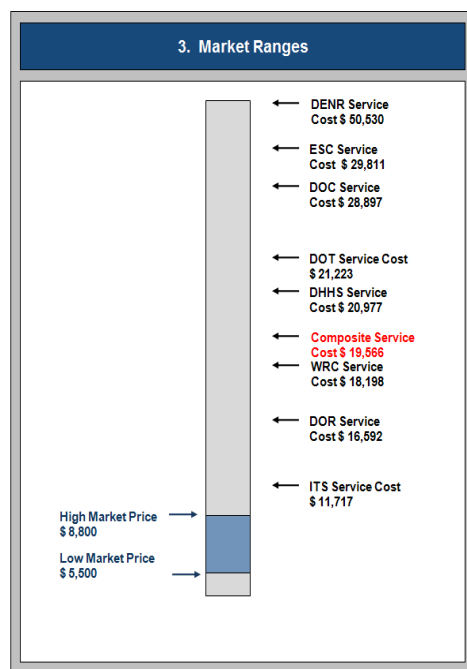
Figure 101 M2M Summary - Mainframe Services

Application Servers

For the purpose of market comparisons, TPI classifies servers by type of operating system; Windows Based and Unix and Unix-like based. ITS' cost to provide both server classifications falls within market range. Five of the Participating Agencies cost base for Windows Servers is higher than the upper market range while two are significantly below. All the Participating Agencies, except for CCPS, are within or significantly below market range. The process of collecting financial data by service towers may have resulted in some mis-alignment of costs among the two towers. In that regard the totality of the Application Server environment should be taken into consideration when drawing conclusions. Figure 102 following graphically represents the ITS and Participating Agencies' position relative to the market.
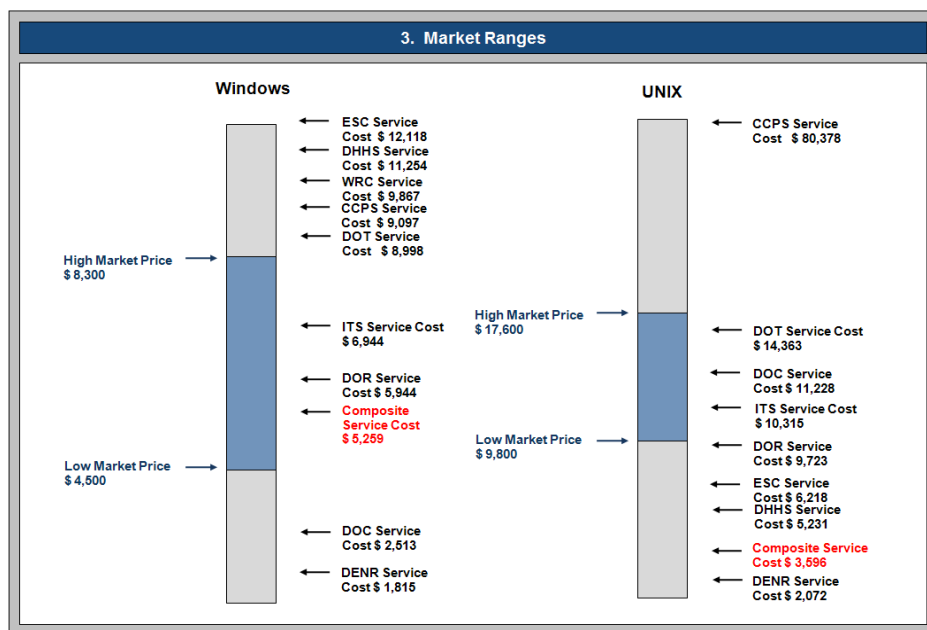
Figure 102 M2M Summary – Application Servers

Utility Servers

All of the Participating Agencies are within or below market range. Figure 103 following graphically represents the ITS and Participating Agencies' position relative to the market.
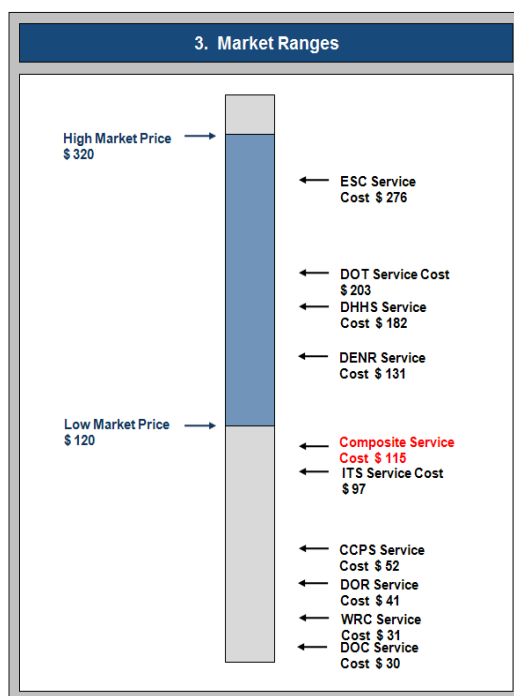
Figure 103 M2M Summary – Utility Servers

Managed Network Services

Managed Network Services excludes the costs associated with applications software and carrier charges in both the development of the service cost and in the market rates. Therefore the comparisons for WAN, LAN and Voice are with regard to an External Service Provider's ability to manage those services. ITS is the primary provider of WAN and WAN Management Services provided by ITS are over 40% above the upper market range. Based upon the Mark-to-Market comparison the WAN Managed Network Services tower is a candidate for external sourcing. Figure 104 following graphically represents the ITS and Participating Agencies' position relative to the market.
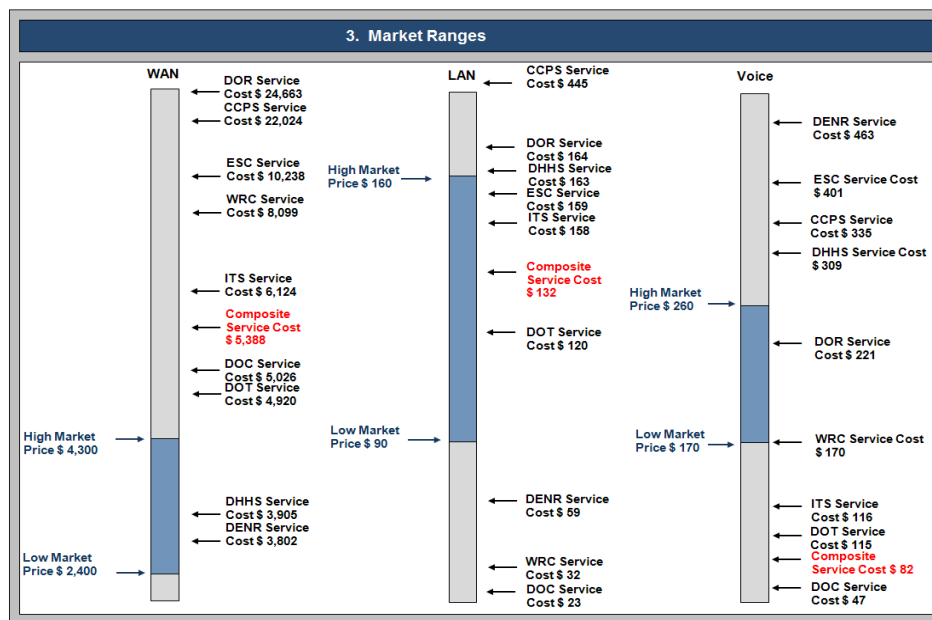
Figure 104 M2M Summary - WAN, LAN and Voice

End User Computing Services

All of the Participating Agencies except for ITS are within or below the market range. ITS' cost to provide End User Computing Services is above the high market range. Figure 105 following graphically represents the ITS and Participating Agencies' position relative to the market
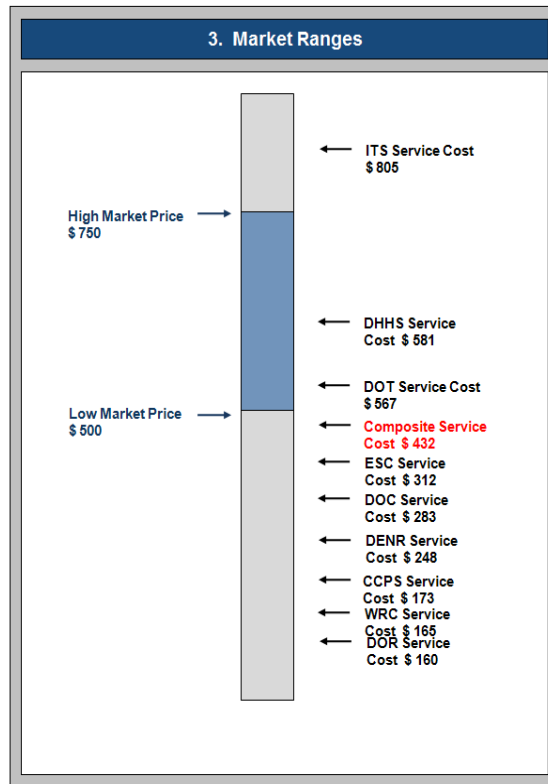
Figure 105 M2M Summary – End User Computing

Service Desk

The Participating Agency Composite and ITS are below the low market range for Service Desk services.
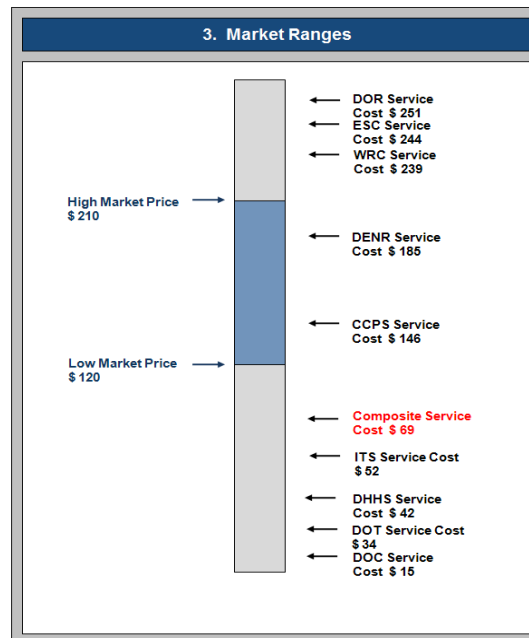
Figure 106 M2M Summary - Service

IT INFRASTRUCTURE STUDY AND ASSESSMENT (INSA)

D. ALTERNATIVES ANALYSIS AND RECOMMENDATIONS

Alternatives Analysis, Business Cases and Recommendations

Approach

Alternative Development

Using the overall objective of Improving INSA agency IT Infrastructure service costs and quality coupled with the results of the Baseline Assessment, the Operational Assessment, the Mark-to-Market (M2M) results and supplemented with TPI's experience and sourcing insight a list of possible alternatives was developed. These alternatives fell into two basic categories:

1) Sourcing of all or select IT Infrastructure services towers to an external service provider and

2) Consolidation of all or a select IT Infrastructure services tower to ITS

Alternative Filtering, Scoring and Selection

The alternatives were then scored based on weighted performance rating factors.

Performance Rating Factors

Twelve performance rating factors were selected that would allow for analysis of the alternatives from a cost management, risk management, and service management focus. The performance rating factors consisted of:

Cost Management

1. Estimated Saving – this factor represents the estimated percent of savings developed in the 5 year business case.

2. Capital Costs – this factor represents that relative amount of capital required to implement the alternative.

3. Transition Costs - this factor represents that relative amount of transition cost required to implement the alternative.

Risk Management

4. Business Risk – this factor represents the change in the risk profile for the business once the alternative is implemented.

5. Service Delivery Model Change – this factor represents the amount of change required in the service delivery model for each alternative.

6. Transition Timeframe – this factor represents the duration of time to implement the alternative.

7. Organization Readiness – this factor represents how capable and prepared the organization is to adapt to the change required by the alternative.

8. Difficulty of Transition – this factor represents the relative difficulty required in implementing the alternative.

Service Management

9. Performance Improvement – this factor represents the overall improvement in performance that the business could expect when the alternative is implemented and running in a steady state mode.

10. Customer Satisfaction – this factor represents the expected improvement in customer satisfaction as a result of the alternative being implemented.

11. Service Governance Complexity – this factor represents the relative complexity in the governance required by ITS in the case of a sourced alternative or by the business in management of ITS in the case of internal consolidation alternatives.

12. Service Levels – this factor represents the expected level of service levels that will be provided by the service delivery organization once the alternative is implemented.

Performance Rating Factor Scoring Matrix

Figure 107 below shows the performance rating scales used in scoring the twelve performance factors for each alternative. A rating of 1 to 5 was used for scoring each performance factor where a rating of 1 represented lowest rating assigned (worst score) and 5 representing the highest score assigned (best score).

Decision Selection Criteria	ID	Performance Rating Factors	1	2	3	4	5
Cost Management	1	Estimated Saving	<5%	5<10%	10<15%	15<20%	>20%
	2	Capital Costs	High		Moderate		Low
	3	Transition Costs	High		Moderate		Low
Risk Management	4	Business Risk	Increased		Neutral		Reduced
	5	Service Delivery Model Change	Significant		Moderate		Minor
	6	Transition timeframe	> 24 months	> 18 < 24 months	> 12 <18 months	> 6 < 12 months	< 6 months
	7	Organization Readiness	Unprepared		Capable		Prepared
	8	Difficulty of Transition	High		Moderate		Low
Service Management	9	Performance Improvement	Low		Moderate		High
	10	Customer Satisfaction	Lessened		Neutral		Improved
	11	Service Governance Complexity	High		Moderate		Low
	12	Service Levels	Very limited to no service levels	Significantly below market level	Below market level	Near market level	At market level

Figure 107 Alternatives Scoring Matrix

Performance Rating Factors Weighting

The performance factors were assigned a weighting from 1 to 10 with 10 being the highest weighting. The highest weighting was assigned to estimated savings, performance improvement, customer satisfaction, and service levels. All of the performances rating factor weightings are listed in Figure 108 following.

Performance Rating Factor	Weight
Estimated Saving	10
Capital Costs	7
Transition Costs	7
Business Risk	5
Service Delivery Model Change	4
Transition timeframe	5
Organization Readiness	3
Difficulty of Transition	5
Performance Improvement	9
Customer Satisfaction	9
Service Governance Complexity	4
Service Levels	9

Figure 108 Performance Factor Weighting

Financial Model Development

A financial model was developed for each alternative and the estimated 5 year savings was established for each alternative. The results of this step were used to determine the rating set for performance rating factor 1 –Estimated Savings.

Scoring and Charting Results

The remaining performance rating factors (2 thru 12) were scored for each alternative and the scores were populated into the scoring table shown in Figure 109. Once all the scoring was populated in this table, the weighting factor was applied.

Figure 109 Alternative Scoring Matrix

The overall weighted scores were bar charted in descending order as shown in Figure 110.
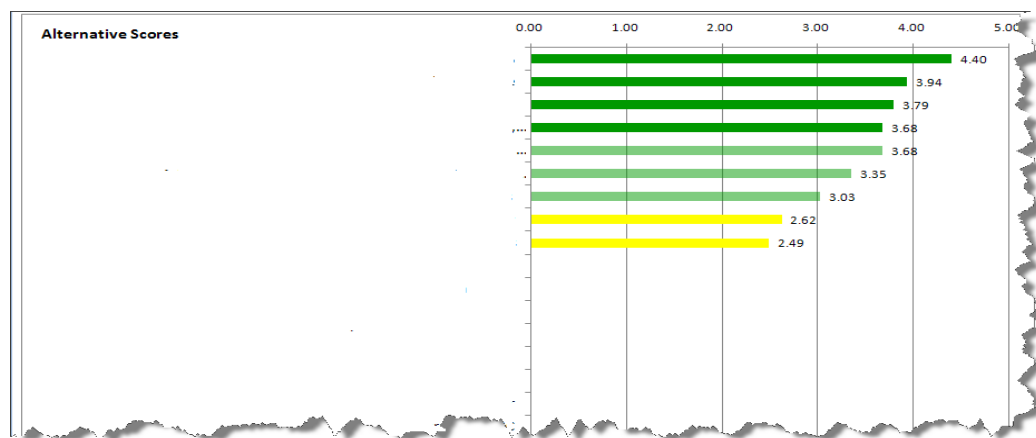
Figure 110 Alternative Scoring Graphic

Universe of Alternatives

Twenty six (26) alternatives were developed for analysis and are listed in the table following:

Ref #	Alternative	Description
1	Sourcing all Towers all Agencies	Complete sourcing of all State infrastructure - all Agencies, all Towers - Mainframe, Servers, EUC, WAN, Voice, LAN, and Service Desk.
2	Sourcing all Mainframe	Source the complete Mainframe Tower.
3	Sourcing all WAN	Source the complete WAN Tower
4	Sourcing all Voice	Source the complete Voice Tower
5	Sourcing all LAN	Source the complete LAN Tower
6	Sourcing all WAN and all Voice	Source the complete WAN and Voice Towers
7	Sourcing all WAN, all Voice and all LAN	Source the complete WAN, Voice and LAN Towers
8	Sourcing all Servers	Source all Servers for all Agencies
9	Sourcing all Mainframe and all Agency Servers	Source the complete Mainframe Tower and all Servers for all Agencies.
10	Sourcing all Mainframe and all Servers from select Agencies – ESC, DHHS, CCPS, and WRC.	Source all of the Mainframe Tower and all Servers for Agencies above the market range. Agencies above the market range are: ESC, DHHS, CCPS and WRC.
11	Sourcing all EUC	Source all EUC for all Agencies
12	Source all ITS EUC	Source EUC for Agencies above the market range. The only Agency above the market range is ITS.
13	Sourcing all Service Desks	Source all Service Desk for all Agencies

Ref #	Alternative	Description
14	Sourcing all DOR, ESC, and WRC Service Desks	Source Service Desk for Agencies above the market range. The Agencies above the market range are: DOR, ESC, WRC
15	Consolidate into ITS all Towers all Agencies	Complete consolidation of all State infrastructure - all Agencies, all Towers into ITS. Towers include: Mainframe, Servers, EUC, WAN, Voice, LAN and Service Desk.
16	Consolidate into ITS WAN	Consolidate the complete WAN Tower
17	Consolidate into ITS Voice	Consolidate the complete Voice Tower
18	Consolidate into ITS LAN	Consolidate the complete LAN Tower
19	Consolidate into ITS WAN and Voice	Consolidate the complete WAN and Voice Towers into ITS
20	Consolidate into ITS WAN, Voice and LAN	Consolidate the complete WAN, Voice and LAN Towers into ITS
21	Consolidate into ITS all non-consolidated Servers	Consolidate all non-consolidated Servers for all Agencies into ITS
22	Consolidate into ITS Servers from select Agencies – ESC, CCPS, DHHS, DOT, WRC	Consolidate Servers for Agencies above ITS. Agencies above ITS are: ESC, CCPS, DHHS, DOT, and WRC.
23	Consolidate into ITS all non-consolidated EUC	Consolidate all non-consolidated EUC into ITS
24	Consolidate into ITS all non-consolidated Service Desks	Consolidate all non-consolidated Service Desks into ITS
25	Consolidate into ITS Service Desk from selected Agencies - DOR, ESC, WRC, DENR, CCPS	Consolidate service deck for Agencies above ITS's Service Desk cost into ITS - DOR, ESC, WRC, DENR, CCPS
26	Sourcing all Servers from select Agencies – ESC, CCPS, DHHS and WRC.	Source servers for Agencies above the market range - ESC, CCPS, DHHS and WRC

Table 58 Universe of Alternatives

Results of Alternative Scoring

Figure 111 shows the performance rating scores and calculated overall weighted score.

Figure 112 shows the resulting bar chart sorted by the overall weighted score. Note that alternatives with a positive 5 years estimated savings are shown with a green rating bar. Alternatives that have a negative 5 year return are shown with a red rating bar.

Scored Alternatives sorted by Weighted Score

ID	Scenario	Performance Rating Factors												Weighted Score
		Estimated Saving	Capital Costs	Transition Costs	Business Risk	Service Delivery Model Change	Transition timeframe	Organization Readiness	Difficulty of Transition	Performance Improvement	Customer Satisfaction	Service Governance Complexity	Service Levels	
2	2 - Sourcing all Mainframe	4.00	5.00	4.00	2.00	4.00	4.00	3.00	4.00	3.00	3.00	4.00	5.00	3.81
3	3 - Sourcing all WAN	2.00	4.00	3.00	2.00	3.00	5.00	3.00	4.00	5.00	5.00	3.00	5.00	3.79
24	24 - Consolidate into ITS all non-consolidated Service Desks	3.00	5.00	5.00	3.00	5.00	4.00	3.00	5.00	3.00	3.00	4.00	3.00	3.71
25	25 - Consolidate into ITS Service Desk from selected Agencies - DOR, ESC, WRC, DENR, CCPS	5.00	4.00	4.00	4.00	4.00	3.00	3.00	4.00	3.00	3.00	4.00	3.00	3.68
10	10 - Sourcing all Mainframe and all Servers from select Agencies – ESC, DHHS, CCPS, and WRC.	4.00	4.00	3.00	2.00	2.00	3.00	2.00	3.00	4.00	4.00	2.00	5.00	3.48
13	13 - Sourcing all Service Desks	1.00	4.00	4.00	2.00	4.00	3.00	3.00	4.00	4.00	3.00	4.00	5.00	3.38
16	16 - Consolidate into ITS WAN	1.00	5.00	5.00	3.00	4.00	4.00	4.00	4.00	2.00	3.00	5.00	3.00	3.31
22	22 - Consolidate into ITS Servers from select Agencies – ESC, CCPS, DHHS, WRC	5.00	4.00	4.00	4.00	4.00	3.00	3.00	4.00	3.00	3.00	4.00	3.00	3.29
17	17 - Consolidate into ITS Voice	1.00	3.00	4.00	4.00	4.00	4.00	4.00	3.00	4.00	3.00	5.00	3.00	3.27
18	18 - Consolidate into ITS LAN	1.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	2.00	3.00	5.00	3.00	3.26
5	5 - Sourcing all LAN	1.00	4.00	4.00	2.00	3.00	4.00	3.00	4.00	2.00	3.00	3.00	5.00	3.10
12	12 - Source all ITS EUC	1.00	1.00	1.00	4.00	2.00	4.00	3.00	2.00	5.00	5.00	3.00	5.00	3.09
19	19 - Consolidate into ITS WAN and Voice	1.00	3.00	4.00	3.00	4.00	4.00	4.00	3.00	3.00	3.00	5.00	3.00	3.09
20	20 - Consolidate into ITS WAN, Voice and LAN	1.00	3.00	4.00	3.00	4.00	4.00	4.00	3.00	3.00	3.00	5.00	3.00	3.09
14	14 - Sourcing all DOR, ESC, and WRC Service Desks	4.00	5.00	2.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.03
11	11 - Sourcing all EUC	1.00	1.00	2.00	3.00	2.00	3.00	3.00	2.00	4.00	5.00	4.00	5.00	2.99
4	4 - Sourcing all Voice	1.00	1.00	2.00	2.00	3.00	2.00	3.00	3.00	5.00	3.00	3.00	5.00	2.81
6	6 - Sourcing all WAN and all Voice	1.00	1.00	2.00	2.00	3.00	2.00	3.00	3.00	5.00	3.00	3.00	5.00	2.81
21	21 - Consolidate into ITS all non-consolidated Servers	1.00	2.00	4.00	4.00	3.00	2.00	3.00	3.00	3.00	2.00	4.00	3.00	2.68
1	1 - Sourcing all Towers all Agencies	1.00	2.00	1.00	2.00	1.00	3.00	1.00	1.00	5.00	4.00	2.00	5.00	2.62
8	8 - Sourcing all Servers	1.00	2.00	4.00	2.00	1.00	3.00	1.00	3.00	3.00	2.00	3.00	5.00	2.61
9	9 - Sourcing all Mainframe and all Agency Servers	1.00	2.00	4.00	2.00	1.00	3.00	1.00	3.00	3.00	2.00	3.00	5.00	2.61
26	26 - Sourcing all Servers from select Agencies – ESC, DHHS, CCPS, and WRC.	1.00	2.00	4.00	2.00	1.00	3.00	1.00	3.00	3.00	2.00	3.00	5.00	2.61
23	23 - Consolidate into ITS all non-consolidated EUC	1.00	1.00	2.00	4.00	3.00	3.00	3.00	2.00	3.00	3.00	5.00	3.00	2.57
15	15 - Consolidate into ITS all Towers all Agencies	1.00	3.00	3.00	2.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	2.49
7	7 - Sourcing all WAN, all Voice and all LAN	1.00	1.00	2.00	2.00	3.00	2.00	3.00	3.00	2.00	3.00	3.00	5.00	2.45

Figure 111 Alternatives Sorted by Weighted Score

Bar Chart of Scored Alternatives sorted by Overall Weighted Score with 5 year Business Case results (000's) added at the end of each Alternative title

Alternative Scores

Recommendation

Alternative	Score
2 - Sourcing all Mainframe $37,212.17	3.81
3 - Sourcing all WAN $6,250.48	3.79
24 - Consolidate into ITS all non-consolidated Service Desks $3,145.08	3.71
25 - Consolidate into ITS Service Desk from selected Agencies - DOR, ESC, WRC, DENR, CCPS $8,997.44	3.68
10 - Sourcing all Mainframe and all Servers from select Agencies – ESC, DHHS, CCPS, and WRC. $43,013.65	3.48
13 - Sourcing all Service Desks $-29,905.57	3.38
16 - Consolidate into ITS WAN $-9,989.05	3.31
22 - Consolidate into ITS Servers from select Agencies – ESC, CCPS, DHHS, DOT, WRC $23,773.00	3.29
17 - Consolidate into ITS Voice $-19,375.50	3.27
18 - Consolidate into ITS LAN $-10,607.89	3.26
5 - Sourcing all LAN $-4,296.67	3.10
12 - Source all ITS EUC $-5,982.82	3.09
19 - Consolidate into ITS WAN and Voice $-29,114.55	3.09
20 - Consolidate into ITS WAN, Voice and LAN $-39,472.45	3.09
14 - Sourcing all DOR, ESC, and WRC Service Desks $1,180.37	3.03
11 - Sourcing all EUC $-36,994.04	2.99
4 - Sourcing all Voice $-56,365.88	2.81
6 - Sourcing all WAN and all Voice $-46,610.60	2.81
21 - Consolidate into ITS all non-consolidated Servers $-38,543.97	2.68
1 - Sourcing all Towers all Agencies $-121,356.06	2.62
8 - Sourcing all Servers $-57,087.97	2.61
9 - Sourcing all Mainframe and all Agency Servers $-16,376.79	2.61
26 - Sourcing all Servers from select Agencies – ESC, CCPS, DHHS and WRC. $1,731.00	2.61
23 - Consolidate into ITS all non-consolidated EUC $-118,991.18	2.57
15 - Consolidate into ITS all Towers all Agencies $-201,283.28	2.49
7 - Sourcing all WAN, all Voice and all LAN $-47,408.35	2.45

Figure 112 Alternatives Sorted With Business Case Impact

Formulation of the Recommendations

The following points describe how TPI selected the four (4) recommendations from the list of twenty eight alternatives. The reader should reference the previous Figure 112 when reviewing these points.

All alternatives with a red rating bar (a negative 5 year return) were eliminated from selection.

Recommendations were selected from the remaining 8 Alternatives with a positive 5 year estimated return. The remaining Alternatives in order of their weighted score are: 2, 3, 24, 25, 10, 22, 14, and 26.

TPI selected four (4) recommendations based on the following:

Recommendation 1 – Alternative 2 - Sourcing All Mainframe was selected as recommendation #1 as it has the highest overall weighted score of 3.81 and a 5 year savings of over $37,212,000.

Recommendation 2 - Alternative 3 – Sourcing All WAN was selected as recommendation #2 as it has the second highest overall weighted score of 3.79 and a 5 year savings of over $6,250,000.

Recommendation 3 - Alternative 24 and 25 are similar in that they both are related to the consolidation of the Service Desk into ITS with the difference being with how many Agencies service desks are consolidated. Alternative 25 was selected over Alternative 24 even though the score for Alternative 24 was slightly higher than Alternative 25 due to the fact that the 5 years estimated savings for Alternative 25 is over $8,997,000 and Alternative 24 had a smaller savings of approximately $3,145,000.

Recommendation 4 – Alternative 22 - Consolidate into ITS Servers from select Agencies – ESC, CCPS, DHHS, WRC with an overall estimated 5 year savings of over $15,269,000. The rational for this selection is that Alternative 10 and Alternative 22 are similar in scope from the perspective that they both deal with the consolidation of servers into ITS. Since Alternative 22 provided a greater savings it was selected over Alternative 10.

The two remaining Alternatives with positive savings, Alternative 14 and 26 were eliminated because their scope has already been included in Recommendations 3 & 4 which had greater savings.

Recommendation #1 – Alternative 2 – Sourcing All Mainframe

Description of Recommendation

This recommendation sources the complete Mainframe Tower to an external provider.

The External Service Provider will provide Mainframe Services from their facilities / data centers using their equipment and staff (including all hardware, software and associated support functions).

Mainframe Disaster Recovery Services included as part of External Service Provider services.

Financial Benefits

- Cost savings estimated at $37.2 million over five (5) years
- Shifts costs to variable/consumption basis – more efficiently accommodates shifts in demand
- Eliminates future capital costs associated with equipment upgrades

Other Benefits

- Upgrade of Service Levels to market norms
- Eliminates challenges of maintaining, retaining and attracting staff with requisite skill sets
- Elevates operational maturity and process discipline

Financial Model

The financial model in Figure 113 below shows that this alternative has a 5 year operational savings of $37.2M and a 5 year savings of 18%. The payback period for this alternative is 1.1 years.

State of North Carolina - INSA		
Alternative # 2 - Sourcing all Mainframe Summary		
Financial Summary - One Year Total		
Current Costs (Operating & Capital)	$41,230,812	recurring
New Cost (Operating & Capital):		
Project Investment (Capital)	$0	
Project One-Time Costs	$10,089,402	
Total Project Costs	$10,089,402	
Future Costs (Operating & Capital)	$31,770,497	
Total Estimated Savings	**($629,087)**	-2% Savings
Return on Investment (ROI)	**-6%**	
Financial Summary - Five Year Total		
1st year Return on Investment (ROI)	-6%	
Total ROI	369%	
Total Project Costs	$10,089,402	
Projected Capital Savings	$0	
Projected Operating Savings	$37,212,172	
Total 5 Year Savings	$37,212,172	
Annual Recurring Savings / (Cost Increase)	23%	by 2nd year
Total 5 Year Savings / (Cost Increase)	18%	
Net Present Value (NPV) @ SNC 0.97%	$35,866,256	
Internal Rate of Return (IRR)	90%	
Payback Period	1.1 Year(s)	

Figure 113 Recommendation 1 Financial Model

Risk Mitigation

There are some known risks with moving to a sourcing solution. It is important to select a supplier that will work well within the State's environment and fit into the culture. Below are the primary risks that come with a decision to source and the steps to mitigate those risks.

The risk mitigation steps as shown in Table 59 should be undertaken to ensure a successful outcome of the recommendation:

Risk	Mitigation
Not attaining market terms and conditions, service levels and price	• Use external Legal counsel specialized in sourcing • Use external sourcing advisor
Loss of Key Staff and Institutional Knowledge	• Identify key staff to manage outsourcing relationship and strategic technology decisions • Develop and execute a communications plan • Communicate clearly and frequently • Ensure key employees are aware of their disposition during and after the project • Create incentive program to retain critical staff • Deliver targeted communications to key skills group • Ensure Change Management Plan has retention objective
Adhere to business case procurement timeframes	• Employ a structure project management process to ensure project milestones are managed • Establish a dedicated procurement core team that is comprised of relevant subject matter experts and augmented as appropriate with key stakeholders
Transition delays	• Establish Sourcing Management Organization prior to contract award. • Use integrated teams consisting of operational, procurement, legal and support resources
Agency "Buy-In"	• Establish IT Shared Services Governance Framework • Hold regular communication meetings with Agencies • Solicit and address Agency concerns about the project • Develop and communicate change plans

	specific to each Agency. • Ensure Agencies understand project timelines and changes in interfaces • Support for outsourcing is evident in both the Governor's Office and in the General Assembly
Having to comply with a more structured and procedure-driven service delivery organization	• Develop Service Levels in the agreement that provide response and resolution performance equal to or greater than existing levels.
Lock in to External Service Provider	• No exclusivity for base and new services • Build terms into contract regarding exit rights and termination assistance • Right to terminate for cause or convenience • Documentation owned by State • Termination assistance clauses in contract

Table 59 Recommendation 1 Risk Mitigation

Transition Timeline

The high level project tasks and time line is shown in Figure 114. It is estimated that the sourcing activity and transition of the State's mainframe to a sourcing provider would take a duration of approximately 9 months.
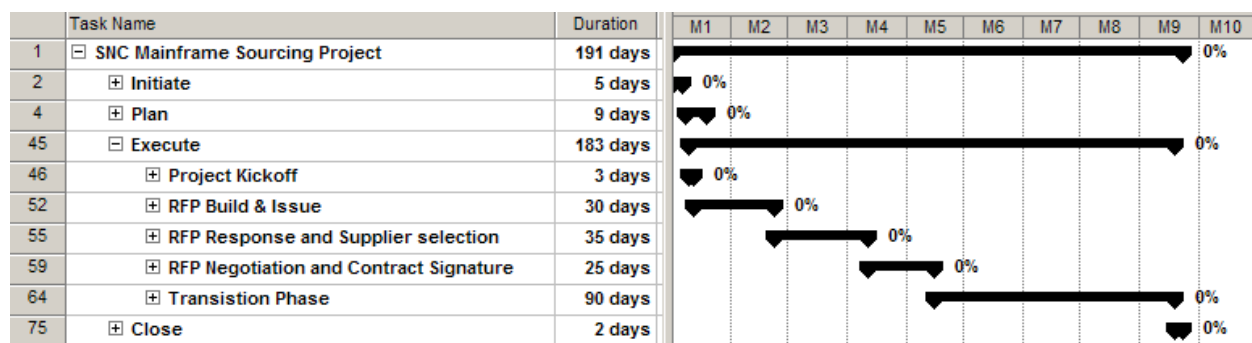
Figure 114 Alternative 2 Transition Plan

Service Delivery Model

Under this recommendation, the Service Provider will assume certain responsibilities for the Mainframe Service Tower. See Figure 115. The total scope of the responsibility that the Service Provider will assume will be determined during the Procurement phase. See Figure 116 for the recommended sourced functions.
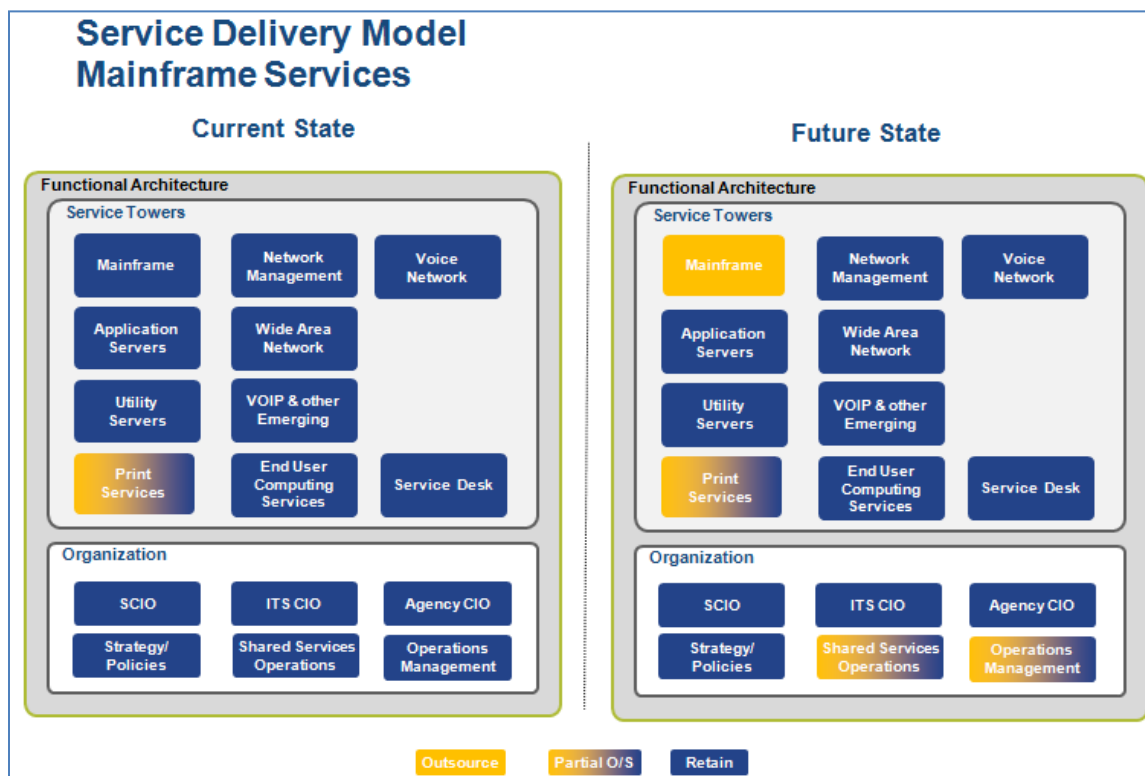
Figure 115 Alternative 2 Service Delivery Model
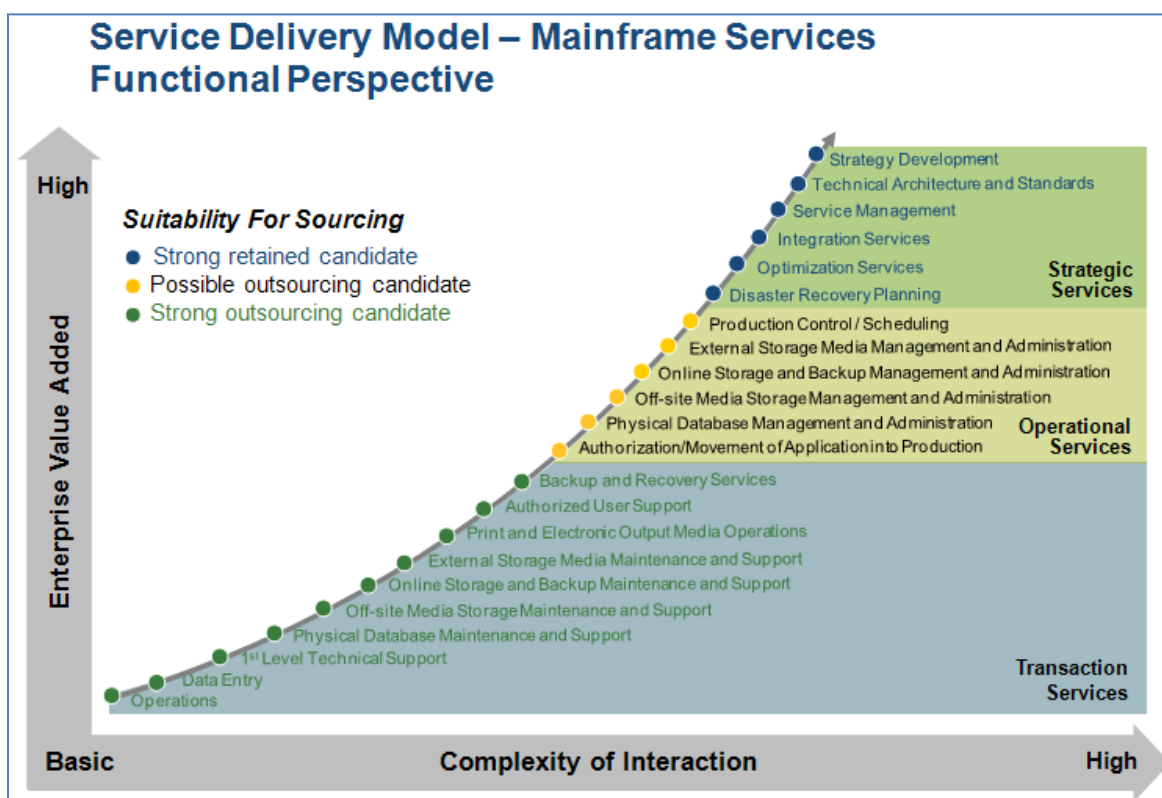
Figure 116 Alternative 2 Sourcing Perspective

Critical Success Factors

A well structured contract is critical, but insufficient to ensure a successful outsourcing relationship. Significant internal transformation will be necessary to enable the outsourcing relationship, along with establishing disciplined sourcing management and governance (Agency and External Service Partner facing), in order to achieve the outsourcing objectives. Additionally the following critical success factors and imperatives must be addressed:

- Support for outsourcing must be evident in both the Governor's Office and the General Assembly.
- A comprehensive communication and change management program must be developed and implemented from the start of the procurement activity.
- Staff responsible for delivering the services to be outsourced must remain accessible through the services transition period, to affect knowledge transfer of the operations from the State to an External Service Provider. This may require precluding staff transfers prior to the completion of transition.
- A dedicated procurement core team must be established that is comprised of relevant subject matter experts and augmented, as appropriate, with key stakeholders.
- A formal Vendor / Sourcing Management Organization (SMO) must be established well in advanced of contract award.

Recommendation #2 – Alternative 3 – Sourcing All WAN

Description of Recommendation

This recommendation sources the complete Wide Area Network (WAN) Tower to an external provider.

The External Service Provider will provide managed network services including:

- Network monitoring and management
- Planning and design services
- Network connectivity and operations services
- Network provisioning management

Financial Benefits

- Cost savings estimated at $6.2 million over five (5) years
- 2.2 year pay-back

Other Benefits

- Upgrade of Service Levels to market norms
- Enhanced network monitoring and improved detection and resolution of network issues
- Enhanced network security
- Eliminates challenges of maintaining, retaining and attracting staff with requisite skill sets

- Embedded technology evolution

Financial Model

The financial model in Figure 117 below shows that this alternative has a 5 year operational savings of $6.2M and a 5 year savings of 6%. The payback period for this alternative is 2.2 years.

State of North Carolina - INSA		
Alternative # 3 - Sourcing all WAN Summary		
Financial Summary - One Year Total		
Current Costs (Operating & Capital)	$21,546,831	recurring
New Cost (Operating & Capital):		
Project Investment (Capital)	$0	
Project One-Time Costs	$4,959,369	
Total Project Costs	$4,959,369	
Future Costs (Operating & Capital)	$19,304,861	
Total Estimated Savings	**($2,717,399)**	-13% Savings
Return on Investment (ROI)	**-55%**	
Financial Summary - Five Year Total		
1st year Return on Investment (ROI)	-55%	
Total ROI	126%	
Total Project Costs	$4,959,369	
Projected Capital Savings	$0	
Projected Operating Savings	$6,250,481	
Total 5 Year Savings	$6,250,481	
Annual Recurring Savings / (Cost Increase)	10%	by 2nd year
Total 5 Year Savings / (Cost Increase)	6%	
Net Present Value (NPV) @ SNC 0.97%	$5,931,516	
Internal Rate of Return (IRR)	35%	
Payback Period	2.2 Year(s)	

Figure 117 Recommendation 2 Financial Model

Risk Mitigation

As suggested in Recommendation 1, there are some known risks with moving to a sourcing solution. It is important to select a supplier that will work well within the State's environment and fit into the culture. Below are the primary risks that come with a decision to source and the steps to mitigate those risks.

The risk mitigation steps as shown in Table 60 should be undertaken to ensure a successful outcome of the recommendation:

Risk	Mitigation
Not attaining market terms and conditions, service levels and price	• Use external Legal counsel specialized in sourcing • Use external sourcing advisor
Loss of Key Staff and Institutional Knowledge	• Identify key staff to manage outsourcing relationship and strategic technology decisions • Develop and execute a communications plan • Communicate clearly and frequently • Ensure key employees are aware of their disposition during and after the project • Create incentive program to retain critical staff • Deliver targeted communications to key skills group • Ensure Change Management Plan has retention objective
Adhere to business case procurement timeframes	• Employ a structure project management process to ensure project milestones are managed • Establish a dedicated procurement core team that is comprised of relevant subject matter experts and augmented as appropriate with key stakeholders
Transition delays	• Establish Sourcing Management Organization prior to contract award. • Use integrated teams consisting of operational, procurement, legal and support resources
Agency "Buy-In"	• Establish IT Shared Services Governance Framework • Hold regular communication meetings with Agencies • Solicit and address Agency concerns about the project • Develop and communicate change plans specific to each Agency. • Ensure Agencies understand project timelines and changes in interfaces • Support for outsourcing is evident in both the Governor's Office and in the General Assembly
Having to comply with a more structured and procedure-driven service delivery organization	• Develop Service Levels in the agreement that provide response and resolution performance equal to or greater than existing levels.

Risk	Mitigation
Lock in to External Service Provider	• No exclusivity for base and new services • Build terms into contract regarding exit rights and termination assistance • Right to terminate for cause or convenience • Documentation owned by State • Termination assistance clauses in contract

<div align="center">Table 60 Recommendation 2 Risk Mitigation</div>

Transition Timeline

The high level project tasks and time line is shown in Figure 118. It is estimated that the sourcing activity and transition of the State's mainframe to a sourcing provider would take a duration of approximately 6 months.
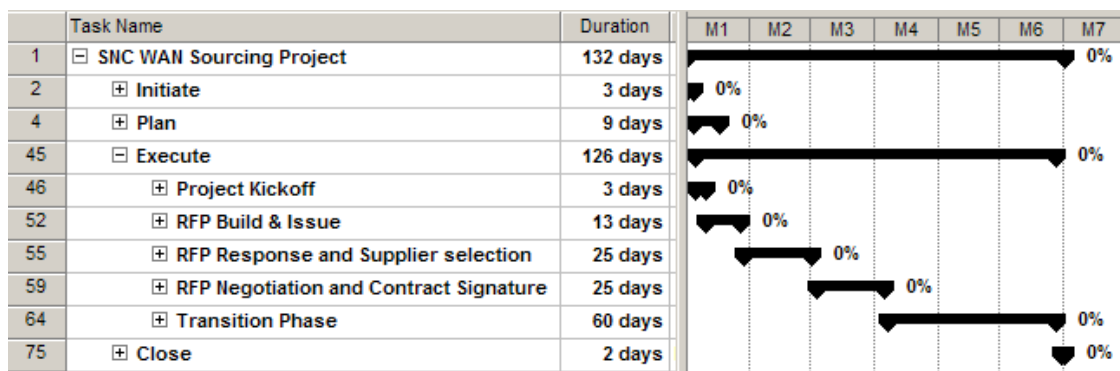
<div align="center">Figure 118 Alternative 3 Sourcing All WAN Transition Plan</div>

Service Delivery Model

Under this recommendation, the Service Provider will assume certain responsibilities for the Network Management Service Tower. See Figure 119. The total scope of the responsibility that the Service Provider will assume will be determined during the Procurement phase. See Figure 120 for the recommended sourced functions.
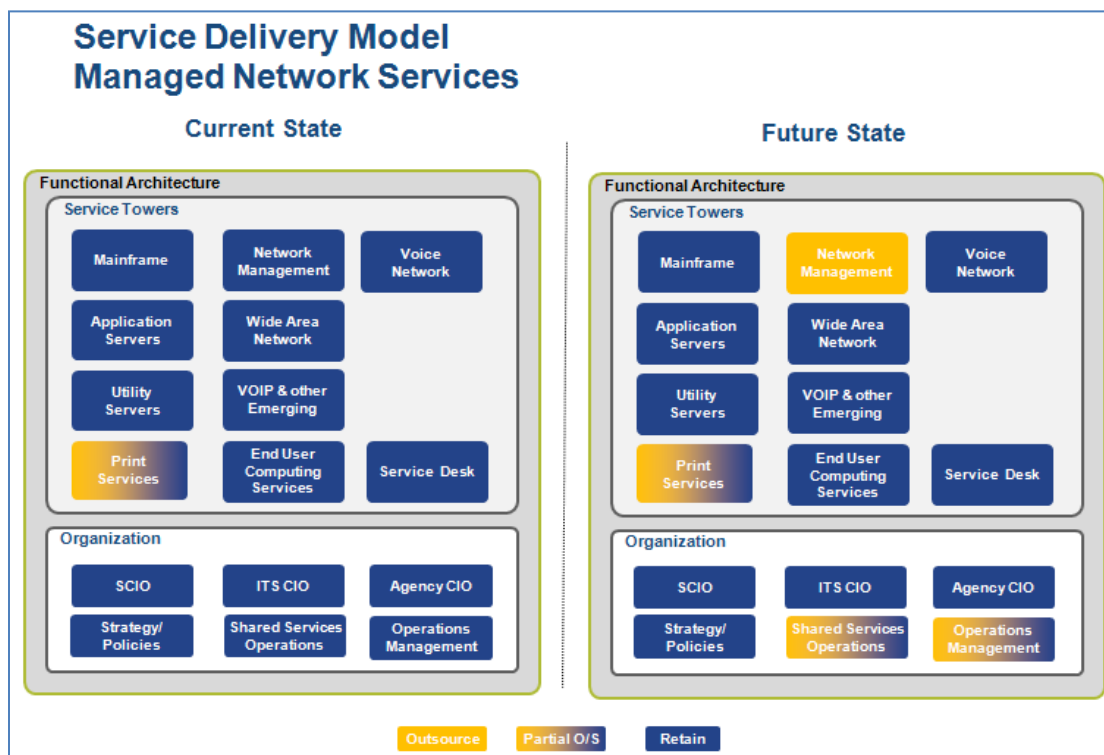
Figure 119 Alternative 3 Sourcing All WAN Service Delivery Model
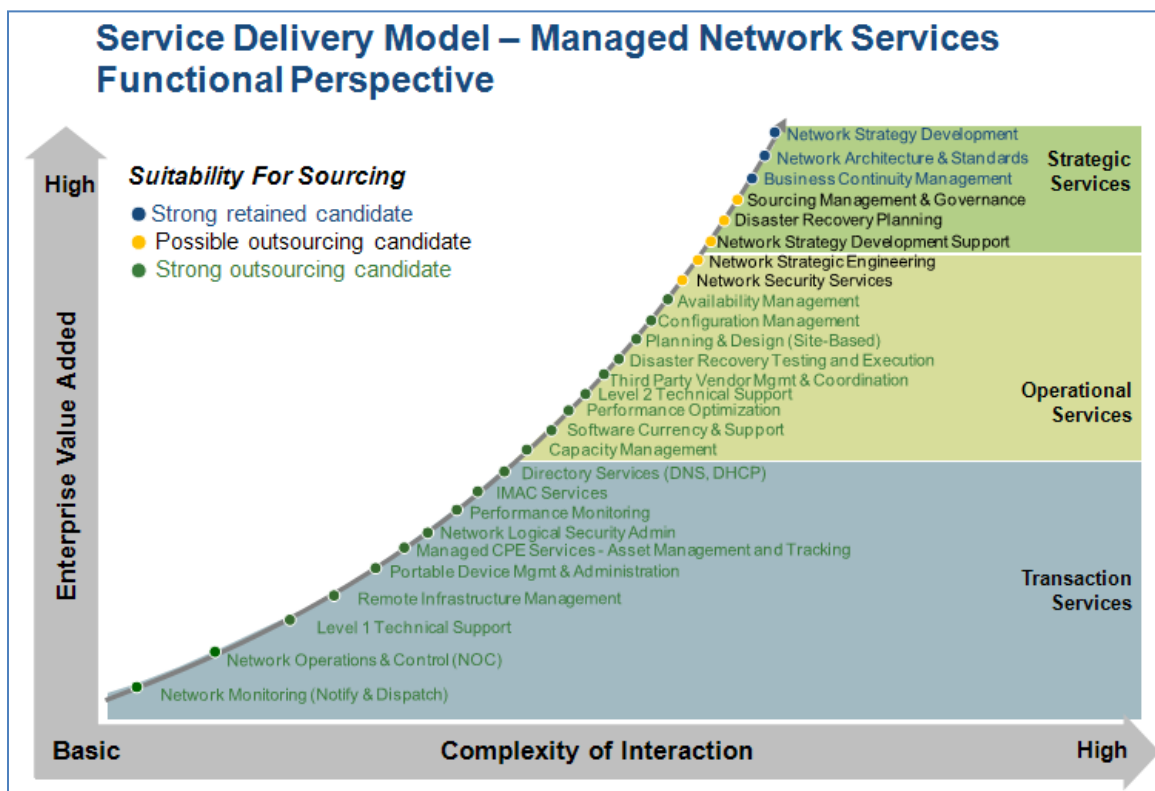
Figure 120 Alternative 3 Sourcing All WAN Functional Perspective

Critical Success Factors

A well structured contract is critical, but insufficient to ensure a successful outsourcing relationship. Significant internal transformation will be necessary to enable the outsourcing relationship, along with establishing disciplined sourcing management and governance (Agency and External Service Partner facing), in order to achieve the outsourcing objectives. Additionally the following critical success factors and imperatives must be addressed:

- Support for outsourcing must be evident in both the Governor's Office and the General Assembly.
- A comprehensive communication and change management program must be developed and implemented from the start of the procurement activity.
- Staff responsible for delivering the services to be outsourced must remain accessible through the services transition period, to affect knowledge transfer of the operations from the State to an External Service Provider. This may require precluding staff transfers prior to the completion of transition.
- A dedicated procurement core team must be established that is comprised of relevant subject matter experts and augmented, as appropriate, with key stakeholders.
- A formal Vendor / Sourcing Management Organization (SMO) must be established well in advanced of contract award.

Recommendation #3 – Alternative 25 – Consolidate into ITS Service Desk from selected Agencies - DOR, ESC, WRC, DENR, CCPS

Description of Recommendation

This recommendation consolidates the service deck for Agencies above ITS's Service Desk cost into ITS. The Agencies with costs above ITS's costs are: DOR, ESC, WRC, DENR, CCPS

This recommendation utilizes existing processes to affect consolidation. Additionally certain previously consolidated agencies have recreated service desks, these should be eliminated.

Financial Benefits

- Cost savings estimated at $8.9 million over five (5) years
- Six (6) month pay-back

Other Benefits

- Leverages existing ITS resources
- Rationalize aggregate staff and optimize skill sets
- Increases volume of incident and service request data to serve as input to continuous improvement programs

Financial Model

The financial model in Figure 121 below shows that this alternative has a 5 year operational savings of $8.9M and a 5 year savings of 67%. The payback period for this alternative is .5 years.

Alternative # 22 - Consolidate into ITS Servers from select Agencies – ESC, CCPS, DHHS, DOT, WRC Summary		
Financial Summary - One Year Total		
Current Costs (Operating & Capital)	$23,479,210	recurring
New Cost (Operating & Capital):		
Project Investment (Capital)	$0	
Project One-Time Costs	$2,772,942	
Total Project Costs	$2,772,942	
Future Costs (Operating & Capital)	$18,170,002	
Total Estimated Savings	**$2,536,266**	11% Savings
Return on Investment (ROI)	**91%**	
Financial Summary - Five Year Total		
1st year Return on Investment (ROI)	91%	
Total ROI	857%	
Total Project Costs	$2,772,942	
Projected Capital Savings	$0	
Projected Operating Savings	$23,773,098	
Total 5 Year Savings	$23,773,098	
Annual Recurring Savings / (Cost Increase)	23%	by 2nd year
Total 5 Year Savings / (Cost Increase)	20%	
Net Present Value (NPV) @ SNC 0.97%	$23,017,759	
Internal Rate of Return (IRR)	190.5%	
Payback Period	0.5	Year(s)

Figure 121 Recommendation 3 Financial Model

Risk Mitigation

The risk mitigation steps as shown in Table 61 should be undertaken to ensure a successful outcome of the recommendation:

Risk	Mitigation Steps

Risk	Mitigation Steps
Agency "Buy-In"	• Hold regular communication meetings with Agencies • Solicit and address Agency concerns about the project • Develop and communicate change plans specific to each Agency. • Ensure Agencies understand project timelines and changes in interfaces
Having to comply with a more structured and procedure-driven service delivery organization	• Develop Service Levels in the agreement that provide response and resolution performance equal to or greater than existing levels.
Inadequate knowledge transfer	• Include knowledge transfer checkpoints in project plan • Oversee transfer of activities including knowledge transfer • Research and use best practice approach in knowledge transfer • Review level and depth of documentation created during knowledge transfer

Table 61 Recommendation 3 Risk Mitigation

Transition Timeline

The high level project tasks and time line is shown in Figure 122. It is estimated that the Service Desk consolidation activity for DOR, ESC, WRC, DENR, and CCPS into the ITS Service Desk would take a duration of approximately 7 months.
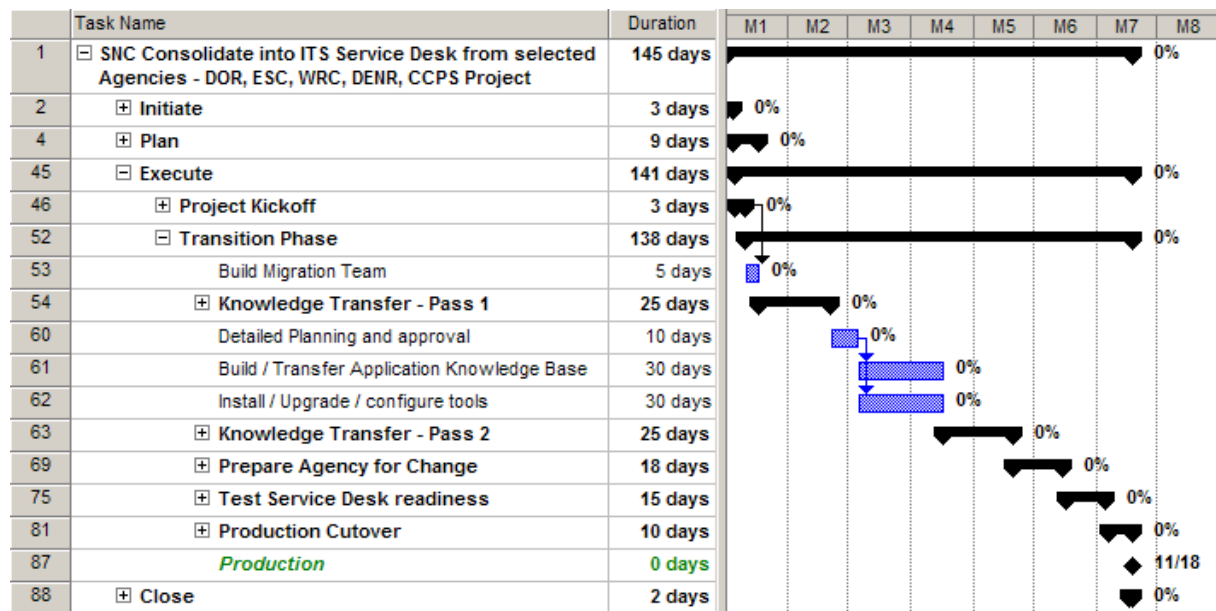
Figure 122 Alternative 25 Transition Plan

Critical Success Factors

Critical to the success of internal consolidation is the establishment of a governing body empowered to ensure the principles of consolidation are followed. The timelines contained in the business cases should be adhered to in order to attain the identified benefits. Additionally the following critical success factors and imperatives must be addressed:

- All identified Participating Agencies IT infrastructure services must be consolidated to achieve the benefits of the recommendation.
- Existing consolidated Participating Agencies customer satisfaction levels must be improved.
- Larger Agencies must be consolidated first.
- Non-consolidated Participating Agency staff currently delivering the services to be consolidated must remain accessible through the services transition period.
- A comprehensive communication and change management program must be developed and implemented prior to starting consolidation.

Recommendation #4 - Alternative 22 - Consolidate into ITS Servers from select Agencies – ESC, CCPS, DHHS, DOT, WRC

Description of Recommendation

This recommendation consolidates servers for Agencies above the market range into ITS. Agencies above the market range are: ESC, CCPS, DHHS, DOT, and WRC.

This recommendation transfers Service Management responsibilities to ITS including:

- Server monitoring and operations management
- Planning and design services
- Server provisioning management

Financial Benefits

- Cost savings estimated at $23.8 million over five (5) years
- Less than one year pay-back

Other Benefits

- Leverages existing ITS resources
- Rationalizes aggregate staff and creates opportunities for optimizing requisite skill sets
- Enables physical consolidation into an ITS data center

Financial Model

The financial model shows in Figure 123 below that this alternative has a 5 year operational savings of $23.8M and a 5 year savings of 20%. The payback period for this alternative is .5 years.

State of North Carolina - INSA
Alternative # 22 - Consolidate into ITS Servers from select Agencies – ESC, CCPS, DHHS, DOT, WRC Summary

Financial Summary - One Year Total		
Current Costs (Operating & Capital)	$23,479,210	recurring
New Cost (Operating & Capital):		
Project Investment (Capital)	$0	
Project One-Time Costs	$2,772,942	
Total Project Costs	$2,772,942	
Future Costs (Operating & Capital)	$18,170,002	
Total Estimated Savings	**$2,536,266**	11% Savings
Return on Investment (ROI)	**91%**	

Financial Summary - Five Year Total		
1st year Return on Investment (ROI)	91%	
Total ROI	857%	
Total Project Costs	$2,772,942	
Projected Capital Savings	$0	
Projected Operating Savings	$23,773,098	
Total 5 Year Savings	$23,773,098	
Annual Recurring Savings / (Cost Increase)	23%	by 2nd year
Total 5 Year Savings / (Cost Increase)	20%	
Net Present Value (NPV) @ SNC 0.97%	$23,017,759	
Internal Rate of Return (IRR)	190.5%	
Payback Period	0.5	Year(s)

Figure 123 Recommendation 4 Financial Model

Risk Mitigation

The risk mitigation steps as shown in Table 62 should be undertaken to ensure a successful outcome of the recommendation:

Risk	**Mitigation Steps**
Agency "Buy-In"	- Hold regular communication meetings with Agencies - Solicit and address Agency concerns about the project - Develop and communicate change plans specific to each Agency. - Ensure Agencies understand project timelines and changes in interfaces
Having to comply with a	Develop Service Levels in the agreement that provide response and

more structured and procedure-driven service delivery organization	resolution performance equal to or greater than existing levels.
Inadequate knowledge transfer	• Include knowledge transfer checkpoints in project plan • Oversee transfer of activities including knowledge transfer • Research and use best practice approach in knowledge transfer • Review level and depth of documentation created during knowledge transfer

<div align="center">Table 62 Recommendation 4 Risk Mitigation</div>

Transition Timeline

The high level project tasks and time line is shown in Figure 124. It is estimated that the Server consolidation activity for DOR, ESC, WRC, DENR, and CCPS into the ITS would take a duration of approximately 18 months.

	Task Name	Duration
1	⊟ SNC Consolidate into ITS Servers from select Agencies – ESC, CCPS, DHHS, WRC Project	569 days
2	⊞ Initiate	3 days
4	⊞ Plan	9 days
45	⊟ Execute	567 days
46	⊞ Project Kickoff	10 days
52	⊟ Transition Phase	567 days
53	Build Migration Team	5 days
54	⊞ Knowledge Transfer - Pass 1	20 days
59	Build / Transfer Server Knowledge Base	30 days
60	Detailed Planning and signoff on Approach	10 days
61	Install / Upgrade / configure tools	30 days
62	⊞ Prep Agency Servers Environment for ITS Ops	150 days
67	⊞ Knowledge Transfer - Pass 2	40 days
72	⊞ Prepare Agency for Change	20 days
77	⊞ Test Server Operations readiness	40 days
82	⊞ Production Cutover	20 days
87	Production	0 days
88	⊞ Close	2 days

<div align="center">Figure 124 Alternative 22 Transition Plan</div>

Critical Success Factors

Critical to the success of internal consolidation is the establishment of a governing body empowered to ensure the principles of consolidation are followed. The timelines contained in the business cases should be adhered to in order to attain the identified benefits. Additionally the following critical success factors and imperatives must be addressed:

• All identified Participating Agencies IT infrastructure services must be consolidated to achieve the benefits of the recommendation.
• Existing consolidated Participating Agencies customer satisfaction levels must be improved.
• Larger Agencies must be consolidated first.
• Non-consolidated Participating Agency staff currently delivering the services to be consolidated must remain accessible through the services transition period.
• A comprehensive communication and change management program must be developed and implemented prior to starting consolidation.

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E. GOVERNANCE AND FUNDING SOURCES

IT Shared Services Governance Framework

An overarching governance framework for IT shared services should be established, either through the reconstitution of the Information Technology Advisory Board (as specified in GS §147-33.72G) or the creation of a successor body, to provide advice and guidance to the SCIO and ITS with regard to planning, implementing and delivering IT shared services.

By having an 'oversight' body external to the IT shared services delivery organization, IT shared services can be objectively evaluated with regard to alignment with business needs and overall value propositions. Acceptance/endorsement of proposed IT shared services (new or revisions to existing services) should be secured from this body by ITS, prior to seeking approval from the Office of Management and Budget to charge receiving departments their proportionate part of the cost of maintaining and operating shared centers and services, as specified in GS §147-33.83. Figure 125 following depicts the recommended IT shared services overarching governance framework.
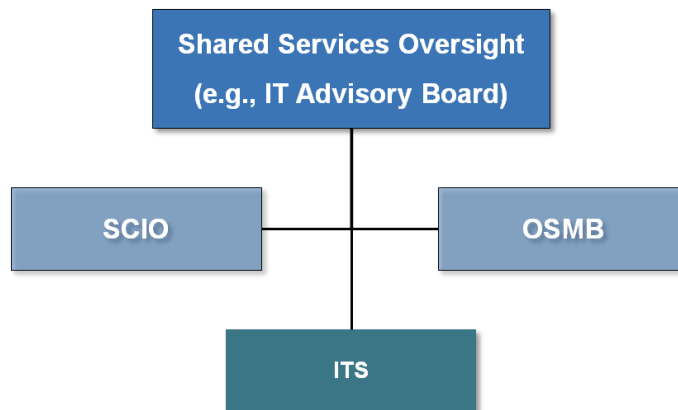
Figure 125 Shared Services Governance Organization

Outsourcing Governance Framework

With regard to governance of outsourced services, ITS will continue to have accountability for those services, and have direct management and oversight of the outsourcing relationship/contract. A companion outsourcing governance framework should be implement within ITS for managing performance, planning and issue escalation, as shown in Figure 126 following.
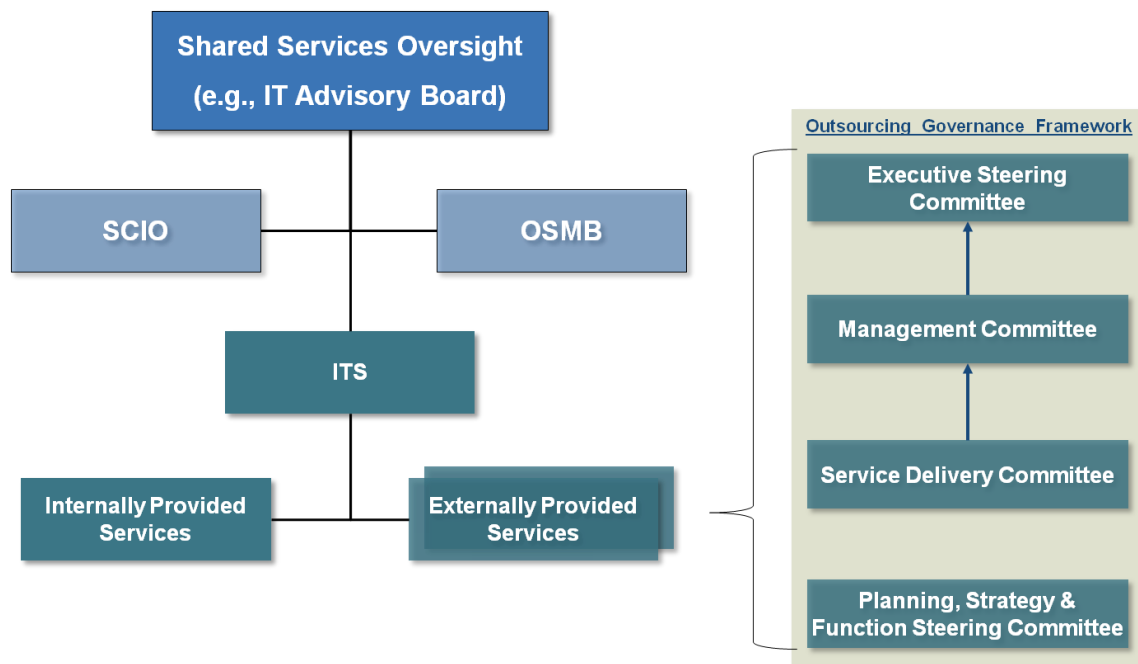
Figure 126 IT Shared Services and Outsourcing Governance Framework

Preliminary responsibilities of the outsourcing governance framework bodies are described in the Figure 127 following.

Outsourcing Governance Framework	Mission	Meetings	Participants
Executive Steering Committee	■ Reviews and approves sourced functional area strategic plans and direction	2-4 times / year	■ Chair: ITS CIO ■ Participants: ITS Agreement Manager, ITS CFO, CTO and Service Provider equivalents
Management Committee	■ Monitors overall sourcing performance ■ Service levels, Agreement compliance, change management, customer satisfaction, invoice questions, issue escalation	1-2 times per month through transition; monthly or quarterly for steady state	■ Chair: ITS Agreement Manager ■ Participants: ITS Service Delivery Leads, PMO, Finance Mgr, Contract Administrator, and equivalent Service Provider staff
Service Delivery Committee	■ Day-to-day management of sourced functions	Daily or weekly through transition, thereafter typically weekly	■ Chair: ITS Service Delivery Leads ■ Participants: ITS Business Relationship Management Manager, Equivalent Service Provider staff
Planning, Strategy & Function Steering Committee	■ Cross-functional committees reviewing strategic direction and design of shared services ■ Can include planning, strategy, technology, business operations, and other areas as needed	Quarterly and as needed	■ Strategy and planning team with equivalent Service Provider staff

Figure 127 Outsourcing Governance Framework Responsibilities

Sourcing Management Organization (SMO)

Direct management of the outsourcing relationships/contracts should be assigned to a dedicated unit with ITS – a Sourcing Management Organization (SMO). The SMO will require on-going support from existing ITS functional units (e.g., finance, legal, procurement, etc.) in order to successfully deliver on its charter of ensuring the objectives of the outsourcing initiatives are achieved.

The design and implementation of the SMO should be performed in parallel with the outsourcing procurement process. This will enable alignment of the SMO design with the outsourcing procurement solicitation scope/requirements, facilitate communication of the State's governance requirements to bidders, and allow for consideration of External Service Provider input and lessons learned with regard to outsourcing governance implementation. Figure 128 following shows the recommended sourcing management disciplines framework that should be addressed as part of the SMO design activities.

Figure 128 Sourcing Management Disciplines Framework

Sources of Funding

Existing statues (i.e., GS §147-33.72H, Information Technology Fund) provide mechanisms for obtaining appropriations for the purposes of affecting consolidation and or procuring of outsourcing contracts. Further, the estimated savings generated by the implementation of the recommendations, in effect, create a pool of dollars which could be 'reinvested' to help fund consolidation and outsourcing implementation costs.

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APPENDICES, FIGURES, TABLES

Appendix A – Baseline Report

Appendix B – Operational and Data Center Assessment Report

Appendix C – Mark-to-Market Report

Appendix D – Interviewees

TABLES